

Material Handling Engineering

Established in 1945 as FLOW Magazine

FEBRUARY 1959



STEVENS HICE
UNIVERSITY MICROFILMS
313 NORTH FIRST ST
ANN ARBOR MICH 48106
FIZ



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AN INDUSTRIAL PUBLISHING CORPORATION MAGAZINE

The original publication of the material handling industry, preferred by identified buyers of material handling, packaging and shipping equipment and supplies.

NØELTING

Faultless L900 Casters

DOUBLE BALL BEARING SWIVEL
MEDIUM DUTY

**CUT YOUR
HANDLING COSTS
3 WAYS**



NØELTING
Faultless
Casters

SUPERIOR DESIGN FEATURES

- 1 **CORRUGATED TOP PLATE** . . . fully hardened to give added strength. Slotted mounting hole spacing permits easy attachment to new equipment. Fits holes drilled from centers of $2\frac{3}{4}$ " x $3\frac{3}{4}$ " to 3" x 3" when used as replacement casters.
- 2 **MAIN LOAD BEARING** . . . consists of 21 hardened, polished balls ($\frac{3}{4}$ " dia.) rolling in large dia. hardened, lubricated raceway permanently attached to caster horn to assure perfect alignment.
- 3 **LOWER THRUST BEARING** . . . contains 10 hardened steel balls ($\frac{3}{4}$ " dia.). Hardened raceway is machined from bar stock. Ball retainer is hardened formed steel.
- 4 **EXTRA-LARGE DIAMETER KINGPIN** . . . assures bonus strength in this caster, and strong, trouble-free construction.
- 5 **CLOSE FITTING, FORMED STEEL CUP** . . . protects thrust bearing from dirt, water and other foreign matter. Holds lubricants in bearings, keeps floor clean.
- 6 **HEAVY GAUGE, FORMED STEEL HORN** . . . easily absorbs highest rated loads and thrust. Correct offset permits easy swiveling and shimmy-free running.
- 7 **FULL SELECTION OF WHEELS** . . . for all types of floors and operating conditions. Bolt and nut axles permit quick wheel replacement when needed.

SERIES L9700 RIGID PLATE CASTER

Wheel types and sizes, load capacities and overall heights to match L900 Swivel Plate Caster.

ASK YOUR DISTRIBUTOR!

Your nearby Faultless Industrial Distributor maintains a substantial inventory of Faultless Casters for immediate delivery. He and one of the strategically located Faultless Sales Engineers are available to work with you on every handling problem in your plant. Both are listed in phone book Yellow Pages, under "Casters," beneath the Faultless heading.



FREE! SEND FOR ILLUSTRATED LITERATURE



Faultless Caster Corporation Evansville 7, Indiana

Send me Free L900 Medium Duty Caster information.

Name

Firm

Address

City State

New STEEL GUARD Industrial Pneumatic Tire from Goodyear—a rugged performer from any angle!



NEW PERSPECTIVE ON "PNEUMATICS"

We put this industrial truck "on glass" to give you the clearest possible view of the amazing new STEEL GUARD Tire in action.

This unusual photo illustrates—in a striking way—three important points that may well change your entire viewpoint on pneumatic industrial tires:

① Notice how the STEEL GUARD rolls right over sharp objects that would puncture other tires. The reason: a rubber-embedded *barrier of steel cables* locked firmly in place between plies—even reaching across the shoulders of the tire.

② Next, look at the rugged lugs on this STEEL GUARD. They provide extra traction and impact resistance on

roughest surfaces (even brickyards and foundry floors).

③ Look now at the sidewall of this STEEL GUARD. Yes, this is a *pneumatic* tire with all the smoothness, stability and flotation of the finest pneumatic tires—yet able to operate in areas where tires of this type failed prematurely before.

Why not let your Goodyear Dealer give you a new slant on pneumatic industrials—and STEEL GUARD—today. Or write Goodyear, Industrial Tire Sales, Akron 16, Ohio.



Bringing new economies to modern materials handling—

INDUSTRIAL TIRES BY

GOODYEAR

Steel Guard—T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

MORE TONS ARE HAULED ON GOODYEAR TRUCK TIRES THAN ON ANY OTHER KIND
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FEBRUARY, 1959

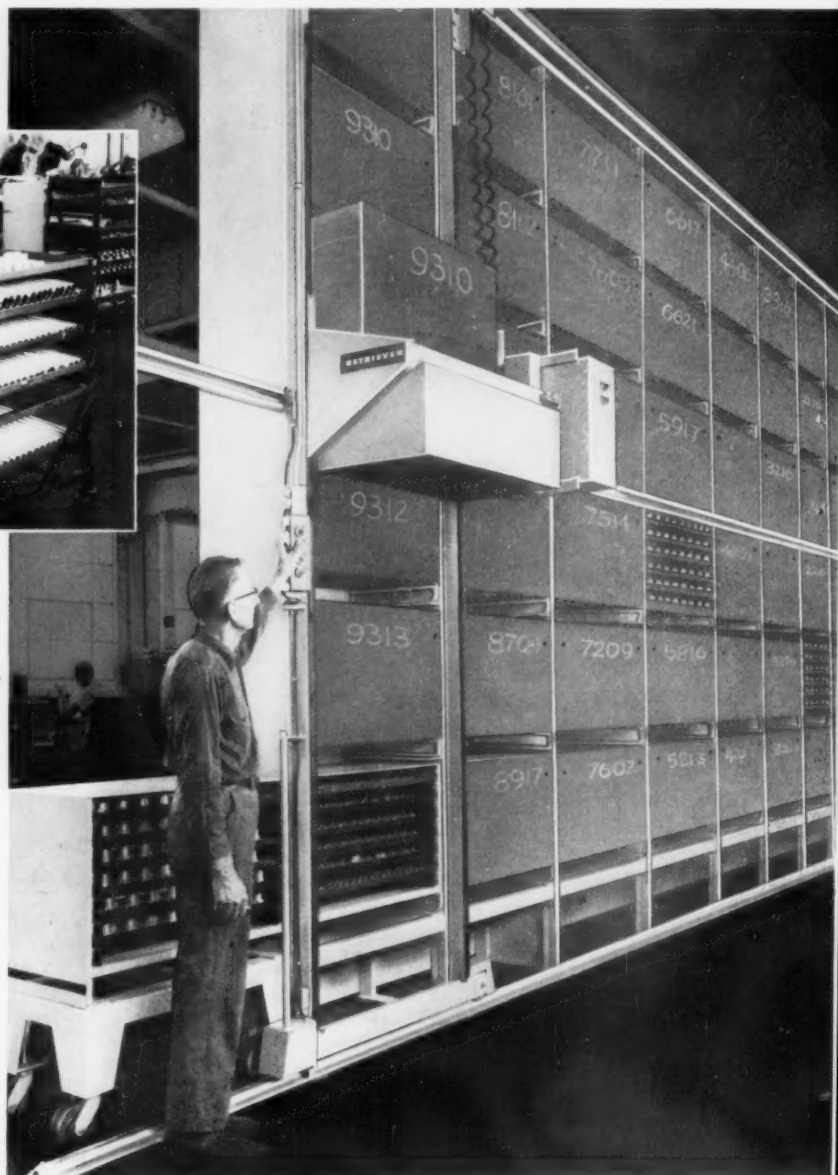
The RETRIEVER... a storage wall that comes to life at the touch of a button

FROM THIS



TO THIS!

Automatic Storage ... Saving Space Manpower... Breakage!



The RETRIEVER, an automatic floor-to-ceiling storage wall, tucks away your parts and equipment in protected compartments for delivery at the touch of selective electrical controls. Aisles become clean and safe, breakage and spoilage problems fade away.

Up to 4000 pounds of materials can be stored in each spacious compartment... on skids or pallets,

in bins or trays. Manpower costs go down with delivery by pushbutton instead of a full-time operator, and a wall does the job of a plant addition. Let us show you how the RETRIEVER can turn a small investment into higher profits and greater production efficiency at your plant... for years to come.

**A Wall instead of an Addition
... An Aisle instead of a Mess**

Inquiries welcomed

... for complete facts, call or write

TRIAx EQUIPMENT

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reader's guide to



for February 1959

COVER: the driver course layout and the "expert driver" are symbols of an effective driver training program set up by The Consolidated Mining and Smelting Company of Canada Limited. You'll find valuable tips on how to sell this kind of program to your drivers and how to set it up efficiently.

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Dry lubricant for lift truck masts in sub-zero operations.

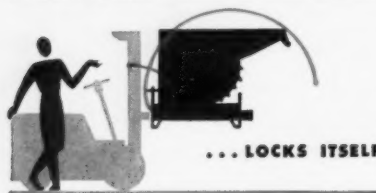
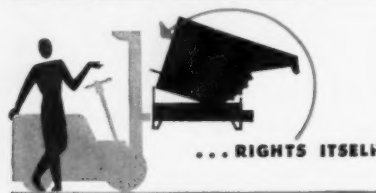
PACKAGING/SHIPPING

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- 85 SHOULD YOU USE A CONTRACT PACKAGER?**
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Remote writing unit and automatic typewriter save time, reduce errors.
- 92 SHIPPING PROBLEM HAS BRIGHT FINISH**
Packaging and shipping idea of the month.



BPA

reader's guide continues on next page



This hopper and your truck can cut handling costs 50%

It's a self-dumping hopper made for fast, efficient handling of wet or dry, hot or cold bulk materials, such as:

Scrap Metal . . . Cinders
Cullet . . . Hot Forgings
Punch Press Parts
Soybean Meal . . . Pickles

Hundreds of industries use thousands of them. Pick-up is swift and simple. Forks or platform of any standard lift truck slide easily into hopper underframe. Truck operator picks up loaded hopper . . . transports it to its destination . . . trips the latch . . . and the Roura does the rest . . . automatically.

They're strong . . . husky . . . made of $\frac{3}{16}$ " steel plate with continuous arc-welded seams. Also available in stainless steel or galvanized. Made in five sizes, $\frac{1}{2}$ to 2 yard capacities, with live skids or a choice of wheels.

Standard models are available for immediate shipment from stock.

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Self-Dumping

HOPPER

WANT MORE DETAILS on how you can save money with Roura? Just clip this coupon... attach it to your letterhead . . . sign your name . . . and mail to

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1411 Woodland Ave., Detroit 11, Michigan

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Material Handling Engineering

volume 14 number 5

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Printed in U.S.A.

NEXT MONTH IN MHE

you'll find a diverse selection of material handling subjects: a description of pneumatic conveying of polyethylene . . . tips on a crane safety program . . . a roundup of ways to handle scrap. And you'll find much useful information in our bag article—what kinds are available, how to pick the right one for your needs.

MATERIAL HANDLING ENGINEERING

STEPHENS-ADAMSON

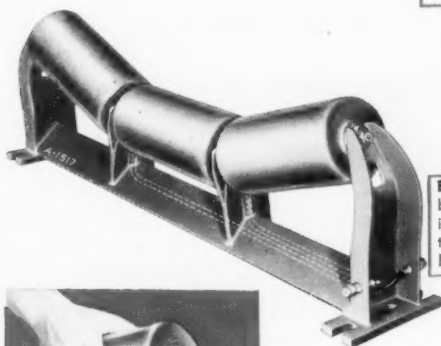
PROVES IT'S WHAT'S UNDER THE BELT THAT COUNTS IN PROFITABLE CONVEYING

S-A CARRIERS

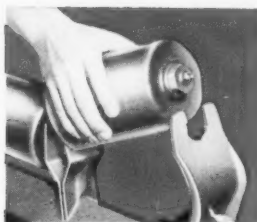
Interchangeability — Roller assemblies and parts for all three rollers are interchangeable.

Positive Lubrication — Each roller assembly pre-lubricated, with an alemite fitting for field lubrication. Lubrication kits can be furnished to provide all grease fittings on one side only.

Labyrinth Seals — Bearings are protected by a die-cast labyrinth seal. Keeps grease in, dust and dirt out. Featured on both S-A Ball and Roller Bearing Carriers.

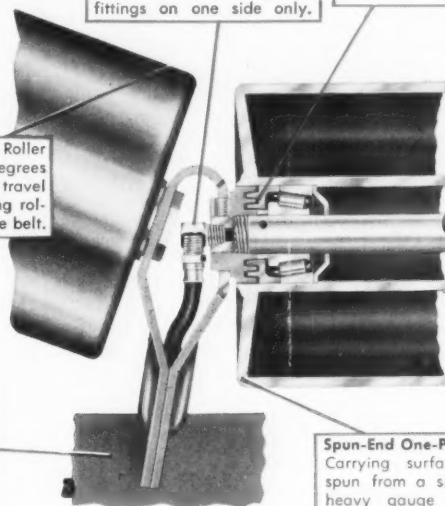


Belt Training — Roller brackets tilt two degrees in direction of belt travel to aid the troughing rollers in centering the belt.



"Lift-Out" Feature — Pre-adjusted individual rollers can be easily slid in or out. Provides for fast roller changes without the use of tools. Rollers will not fall out during actual use.

Rugged Frame Construction — One piece, all-steel, welded frame features inverted angle cross members and outer brackets designed to prevent spillage from collecting.



Spun-End One-Piece Rollers — Carrying surface and ends spun from a single piece of heavy gauge steel tubing.

CURVE CROWN

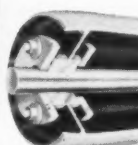
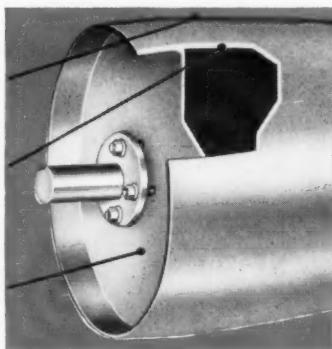
STEPHENS-ADAMSON

WELDED ALL-STEEL PULLEYS

CURVE CROWN DESIGN
CURVE CROWN on outer ends of rim accurately formed. Eliminates belt stretch and wear — while increasing belt training effect more than 100%.

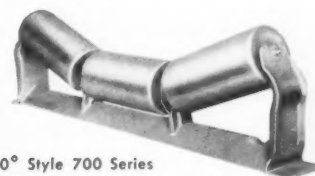
STURDY RIM CONSTRUCTION
One piece rims formed absolutely round under hydrostatic pressure. Machine-welded inside and out to insure 100% penetration.

ACCURATE END PLATE ASSEMBLY
O.D. and I.D. of end plates machined to insure concentricity. They are pressed into position for tight fit-up — submerged arc-welded for maximum efficiency.

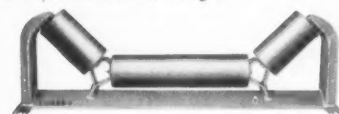


"SQUEEZELOCK" HUB

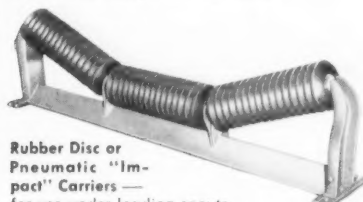
Provides gripping power for full torque transmission **without use of keyways** and eliminates distorting loads against pulley end plates.



20° Style 700 Series Carriers — Designed for years of rugged service. Equipped with precision ball bearings.



35° and 45° Deep Trough Carriers — for handling grain, chips or similar materials. Equipped with precision ball bearings. Three equal roller design also available.



Rubber Disc or Pneumatic "Impact" Carriers — for use under loading spouts in belt conveyors, feeders and shuttle conveyors to cushion the lumps.



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CARRIER Bulletin 355
PULLEY Bulletin 558

Stocked for Immediate Shipment



**STANDARD PRODUCTS DIVISION
STEPHENS-ADAMSON MFG. CO.**
GENERAL OFFICE & MAIN PLANT, 36 RIDGEWAY AVENUE, AURORA, ILLINOIS
PLANTS LOCATED IN: LOS ANGELES, CALIFORNIA • CLARKSDALE, MISSISSIPPI
BELLEVILLE, ONTARIO

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Will New "Perimeter Supply" Ideas Improve Your Next Industrial Plant Layout?

Rapistan® Flow Rack™ Methods Upset Old Concepts Of Supplying Work Areas

You've heard of storage "at the point of use"? Perhaps you've even applied it in the usual way — by stacking materials next to the worker. It still means that your lift truck or floor truck must enter the work area, disturb the schedule, clutter up the area, create personal injury hazards and invite conversation.

Today's new approach to this storage at the point of use is "Perimeter Supply," made possible now by creative use of Rapistan live-storage Flow Racks surrounding a work area.

This method will change thinking on plant layout. Why? It pays off handsomely in work area space savings, and improved production through smoother materials handling. We've proved this — **right in our own plant!** Our plant engineers recommend this new method to their contemporaries.

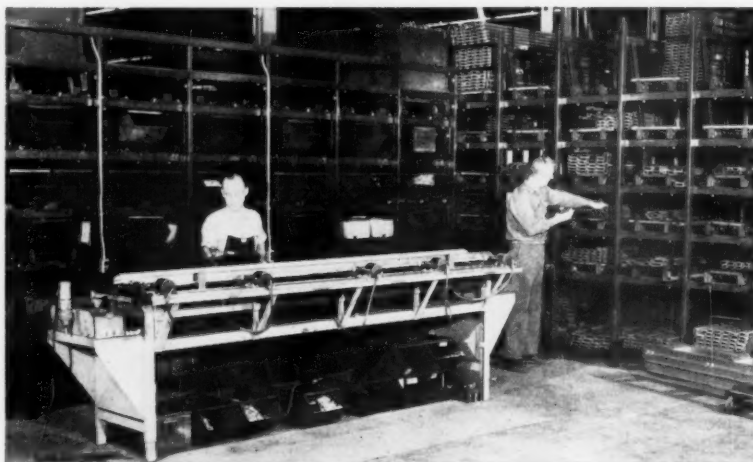
Can you see how "perimeter supply" can give you the benefits described in the next paragraphs?

Less Time, More Movement

Perimeter Supply accomplishes the industrial engineer's objective of bringing the work to the worker at his work station. Only assigned workers enter a work area when



SUPPLIES ARE DELIVERED without disturbing operations inside the work area. Here tote pans are loaded into a Flow Rack from the perimeter service aisle. Lift truck transfer attachment lines up with Flow Rack storage hatches to speed loading.



WORKERS HAVE A CONSTANT SUPPLY of all needed materials near at hand, in the Flow Rack live storage racks which bound this department. Racks are supplied from service aisles outside the area. Gravity force moves the supplies through the rack to the workers. Stock men need not enter the area.

Flow Racks surround it in a "perimeter supply" pattern. Undisturbed work is efficient work.

Better Operations Control

Inventory control is at its best when perimeter supply is used with Flow Racks. Storage is properly organized, orderly and efficient. Stock rotation is always first-in-first-out. There is continuous control of inventory level, since the supply on hand can quickly be checked at a glance. Material for a day's run is ready at arm's length.

Improved Labor Efficiency

Perimeter Supply separates materials handling from other labor. When a man no longer must take time to hunt for materials, he has more time to spend at his production job. Output per man-hour increases by fencing out distractions and conversationalists.

Longer Production Runs

Flow Rack uses all the available cube area, when applied in a "perimeter supply" pattern. It increases the storage capacity at point of use, puts more on less floor. Consequently, it's possible to get more

production efficiency by setting up longer production runs of components and sub-assemblies. This means savings in set-up time, and other benefits coming from higher volume production.

More Profitable Use of Space

Space is measured by the dollar as well as by the square foot. When work areas are perimeter-supplied, the need for aisle space within the area is eliminated. Production areas can be more compact — more efficient. Productivity per square foot of plant space goes up, and plant profits follow accordingly. That's what materials handling engineering management is paid to accomplish.

Your local Rapistan representative knows all this, and can help you gain these layout benefits in your own plant. It takes minimum investment in conveying equipment. Let us send you an interesting case study of space and labor savings through improved materials handling with Flow Rack ideas. **Please circle No. 10 on the Reader Service Card.**

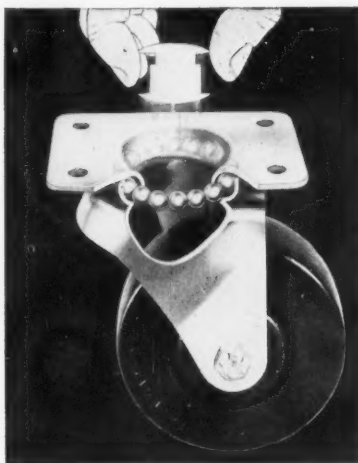
The King Pin is Gone — Long Lives the New Rapistan Caster!

In its day, a king pin was fine for single ball raceway casters. But it's definitely "old hat" now.

Rapistan's new 3100 Series caster eliminates the errant king pin, and gives you far longer caster life and much easier swiveling action.

Instead of using a king pin in the new Rapistan 3100 Series Caster, the top plate and yoke are joined by a ball bearing raceway. How does this result in longer caster life and easier swiveling? Read on.

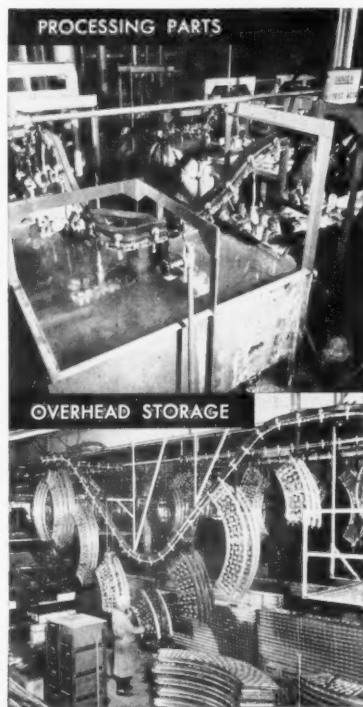
1. The principal point of premature failure in most casters, the king pin, is entirely eliminated.
2. Shocks and stresses are distributed evenly over a hardened ball bearing, not concentrated on a king pin and a limited area of the bearing. This minimizes ball bearing indentation and prevents uneven wear on the raceway.
3. The bearing provides snug-fitting, all-around rolling contact between the top



plate, bearings and yoke. It eliminates binding friction at the king pin, making this 3100 Series the easiest-swiveling caster ever designed.

For literature on this remarkable new development in caster design, Circle No. 11 on the Reader Service Card.

"Air Pockets" In Your Plant? Rapistan Overhead Conveyor Fills Them For Better Handling



Rapistan-Keystone overhead trolley conveyor proves many times to be the most efficient means of moving parts through processing operations, and a space-saving method of warehousing finished goods in many applications. With its exclusive "high-payload" forged steel trolleys and patented design rivetless chain, Rapistan-Keystone equipment stands up under punishing applications like these far better than any other light-medium duty overhead conveyor. This is not overstatement — it's fact!

Here are two typical examples of R-K. overhead conveyors used for movement and storage. A "big three" automobile manufacturer (top) uses Rapistan overhead conveyor to move engine pistons through successive plating and rinsing baths. Bulky finished parts are stored efficiently on Rapistan-Keystone overhead conveyor (bottom) above the order accumulation area of this plant. For details, Circle No. 12 on the Reader Service Card.

Cost Reduction Through Technics

By Joseph A. Sedlak, Consultant
Cleveland, Ohio

I am a staunch supporter of the "Technics approach" to materials handling.

All too often, materials handling is not providing as great a return on investment as expected.



"Technics" is a program dedicated to the fullest possible utilization of equipment. This "utilization factor" of new and present equipment can be increased by a program of study, analysis and coordination of the many departments of a business that are affected by materials handling.

For example . . . one of the very large dress manufacturers installed a fine conveyor system for final packing and shipping. By applying the "Technics approach" to the problem, beyond the materials handling operation, they made an additional saving of \$6,500 a year.

"Technics" recognizes materials handling as a catalyst within the company that can bring about far reaching cost reductions.

"However, materials handling must be approached on an overall company basis. It reaches from supplier to customer. It is not fully effective when approached on an isolated or piece-meal basis."

Send For This Handbook Of Money-Saving Ideas



You'll have a close-up view of more than 70 actual handling problems solved, as you leaf through this new handbook of materials handling ideas. See how the coordinated use of many Rapistan conveyors is compounding savings in time, space and manpower through better materials handling. Circle No. 13 on the Reader Service Card.

Rapistan®

materials handling systems

The RAPIDS-STANDARD CO., Inc.

551 Rapistan Bldg., Grand Rapids 2, Mich.

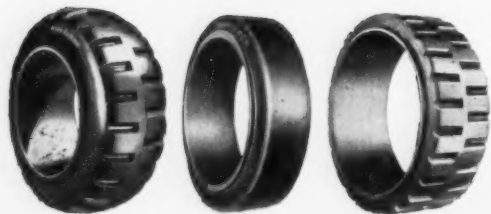


"It's been there ever since we switched to
MONARCH SOLIDS...
 and cut replacement costs substantially!"

Many savings-conscious buyers have acquired a "halo" of achievement by specifying MONARCH industrial solid tires. When materials handling expenses... especially *replacement costs*... run high, these men know that top management asks "job security" questions. And expects to get real good answers!

The best answer to high replacement costs in lift truck tires is MONARCH solids. Made from the toughest *natural rubber* stock developed to date, these dependable high-performance tires give more ton-miles of service per dollar.

FOR DETAILS AND
 SPECIFICATIONS, ask
 your Monarch dealer... or
 write direct... for
 CATALOG MR-457.



8312-MR

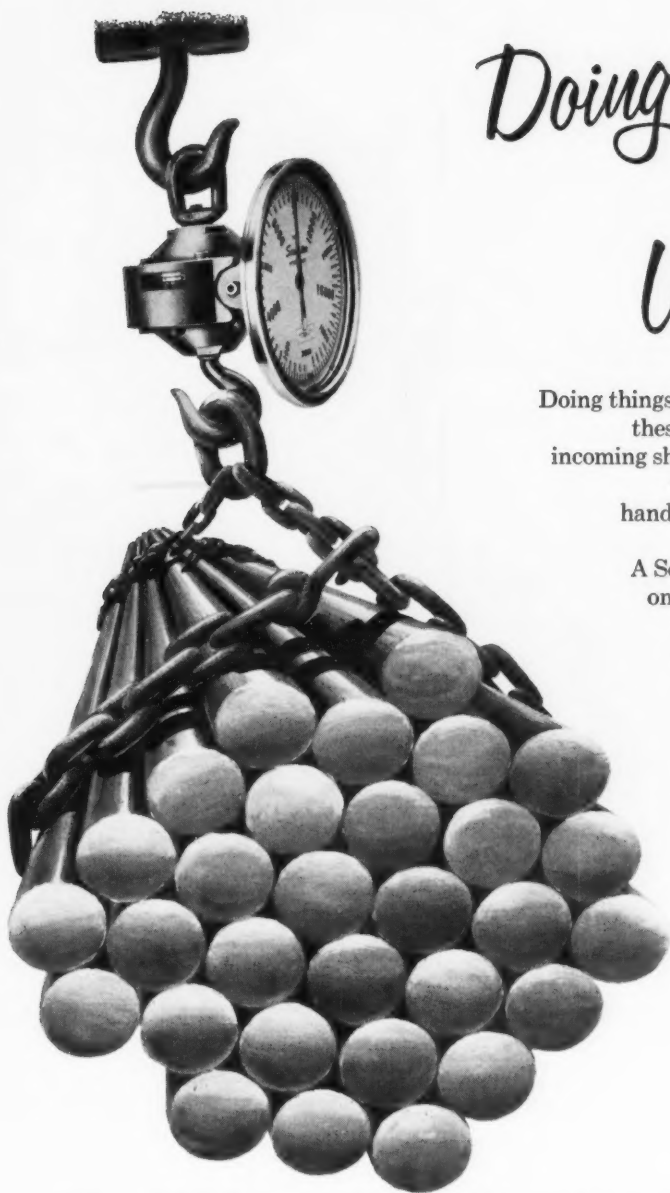
THE
MONARCH
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 • 7-225 General Motors Bldg., Detroit, Mich.
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 • WAREHOUSE: Reno, Nevada



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MATERIAL HANDLING ENGINEERING



Doing things in a Big Weigh!

Doing things in a big "weigh" in your plant? Most of us are these days. Whether it's checking the weight of an incoming shipment to be sure you're getting your money's worth — or a routine inventory of materials on hand — a Martin-Decker Sensater Hook Scale does a better job and saves time and money.

A Sensater cuts the work in half. Lift and weigh in one easy operation. No time consuming moves to and from stationary scales to check weights. Cut materials-handling costs to new lows and make your product cost less to manufacture, store, ship and receive.

Do things in a big "weigh" — the easy way with a Martin-Decker Sensater Hook Scale on your next job. *You'll be glad you did!* Write for free descriptive literature today.

The SU-20 Sensater is manufactured in six capacities from 1,000 to 20,000 lbs. There's one designed to fit your need.



Other Martin-Decker weight and tension-indicating instruments



Lift-Truck Scale converts fork truck to mobile weighing device. Connects to hydraulic system. Prevents overloads. Capacities: to 20,000 lbs.



SB-10 Crane Weight Indicator for boom cranes. Shows boom radius, lifting capacity at radius, total weight lifted. Capacities: to 500,000 lbs.



Cable Tension Indicator can be clamped on a line in seconds and tell the amount of pull or strain.



SJ-701 Tensiometer. Utilized instrument used as traction dynamometer suspension scale.



SJ-703 Tensiometer. Remote indicating dynamometer, suspension scale.

Write today for free descriptive literature to: Martin-Decker Corp., 3431 Cherry Ave., Long Beach 7, California, Dept. N-21.

MARTIN-DECKER CORP.
HOME OF THE WEIGHT INDICATOR — LONG BEACH, CALIFORNIA

Circle 80 on Reader Service Card for more information



This one man controlled 100' turntable ladder fire escape uses Keelavite hydraulics. It is made by Merryweather & Sons Ltd., London.

HYDRAULICS IN MECHANICAL HANDLING

We at Keelavite are a team of experts in the design, installation and maintenance of complete hydraulic systems. We are ready to accept full responsibility for the proper working of all our installations, including all electrical or other control equipment.

Not only this, we are the manufacturers of the largest range of hydraulic units in the United Kingdom.

We are, of course, fully experienced in special applications of hydraulic power for the mechanical handling industry.

KEELAVITE

Hydraulics

MECHANICAL HANDLING DIVISION

THE RECOGNISED AUTHORITY

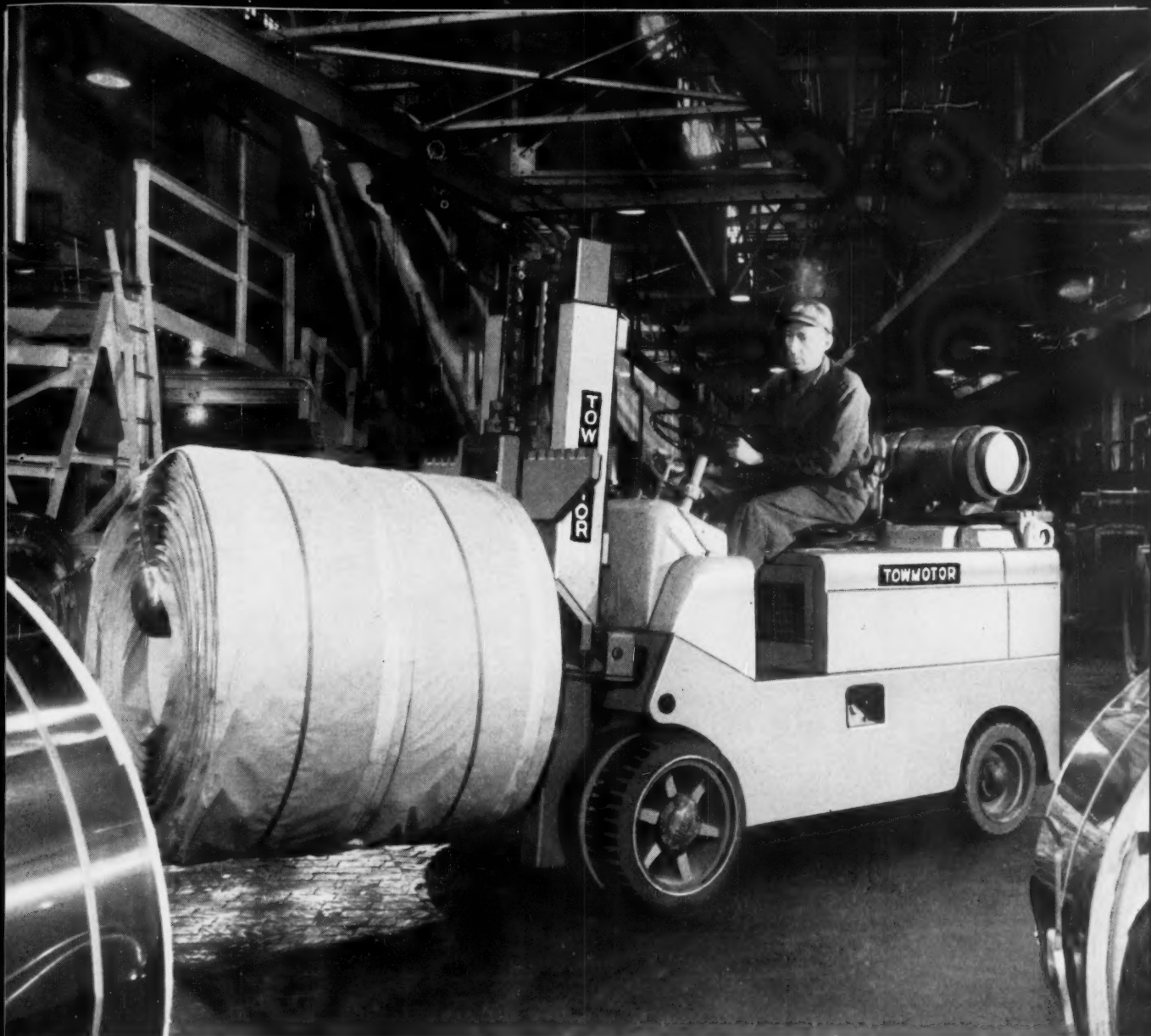
KEELAVITE HYDRAULICS LIMITED,

ALLESLEY, COVENTRY

Telephone: MERIDEN 441

Circle 73 on Reader Service Card for more information

MATERIAL HANDLING ENGINEERING



Greatest get-up-and-go...

Of all fork lift trucks, *this Towmotor Pace-Maker has it!* Mass-handling miracles seem to happen every minute it's on the job. Its hydraulic muscles hustle heavy loads through storage, production and shipping with a real promise of extra profits *around the calendar.*

Let us send you latest on-the-job facts applying to your specific type of factory, mill or warehouse operation. Ask for Certified Job Studies relating to your own business—and the new *Pace-Maker* Booklet SP-23. Write *Towmotor Corporation, Cleveland 10, Ohio.*



®

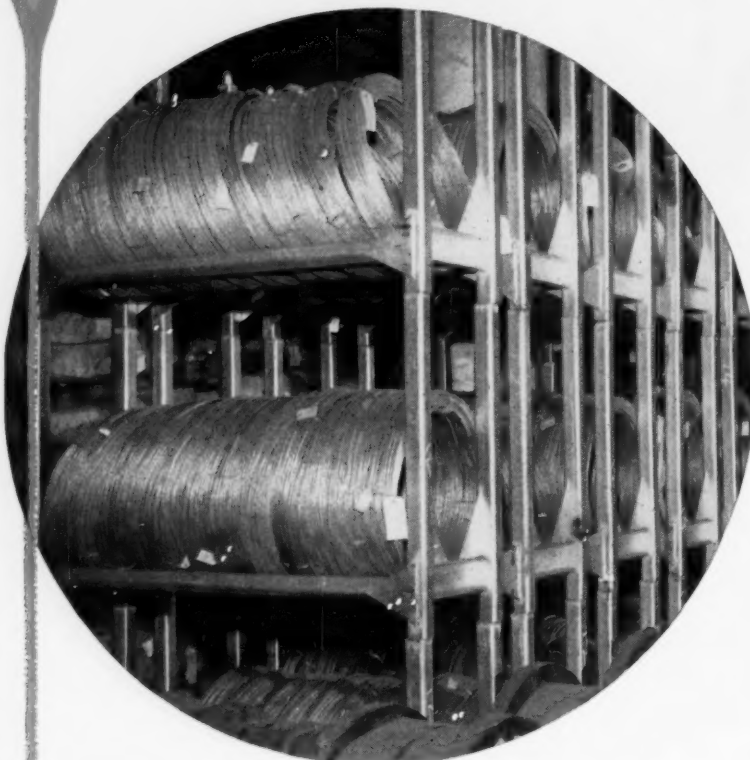
Gerlinger Carrier Co. is a subsidiary of Towmotor Corporation

Circle 112 on Reader Service Card for more information



put **your** upper space to work!

get your materials
off the ground with
EMI RACKS



you can stack or ship
anything in any industry on
EMI RACKS



**COMPLETE METAL WORKING
FACILITIES INCLUDING . . .**

TUBING—Square, Round, Rectangular
and special shapes

WIRE MESH—All Gages
SPECIAL FABRICATIONS

Write for complete catalog!

**EQUIPMENT
MFG. INC.**

21552 HOOVER ROAD
DETROIT 5, MICHIGAN

Circle 51 on Reader Service Card for more information



PEG BOARD GIVES . . .

Extra Hands for Radio Dispatcher

A two-way radio system teamed with a peg board positioner has resulted in unusual mobility in dispatching at the Allis-Chalmers Pittsburgh Works. Drivers can be contacted anywhere on the road. Material trucks can be sent wherever they are needed.

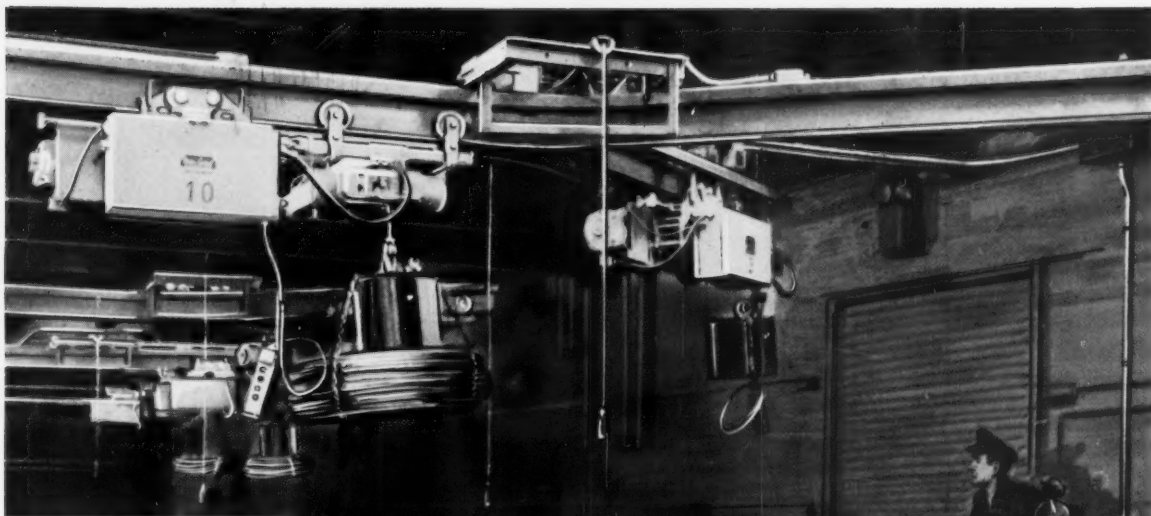
The system consists of a base station, eight shipping department trucks, and one station wagon all equipped with sending and receiving apparatus.

A typical operation begins with the dispatcher receiving a call from a plant department asking for a truck.

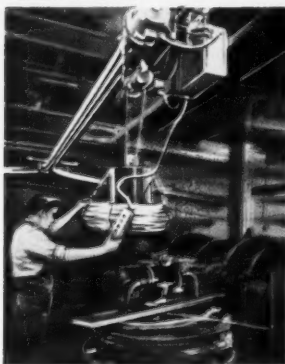
After checking the peg board and the operation log which give the position and destination of each vehicle, the dispatcher decides which truck to use. He calls the driver and gives the order.

When several urgent calls come in at once, he determines which drivers can be switched from less pressing assignments with least disruption.

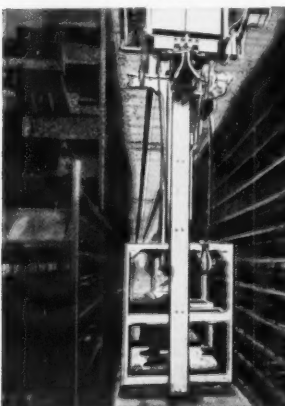
Between calls, he keeps the peg board up to date and makes entries in the operation log for each transmission. Each driver calls in on arrival and departure.



The loaded carrier has been dispatched to one of 150 heading machines. The Dispatcher is positioning the empty Louden MotoVeyor carrier for another load.



The carrier automatically stops at a selected heading machine, and operator lowers the coil of wire to heading machine reel. After hoist is raised, carrier automatically returns to Dispatch Area. Louden Shok-Pruf Electrification is used throughout.



Two Louden Tying Trolleys serve each pan storage aisle. View shows Tying Trolley Operator removing tote pan from storage for transfer to another department. The platform of the motor driven Tying Trolley raises and lowers enabling the operator full coverage of the storage aisle. Current supplied by Shok-Pruf Electrification.

Industry's Airways **UNTANGLE** Materials Transport

In planning their new plant at Clifton, New Jersey, the Parker-Kalon Division of General American Transportation Company, manufacturers of self-tapping screws and metal specialties, "took to the air" to end longstanding problems and needless costs in materials handling. Working with Louden engineers, they took advantage of the opportunities offered by monorail overhead handling to coordinate materials supply and manufacturing needs from receiving of raw stock to the shipping of the finished product.

Typical of the improvements made was the handling of stock in the Heading Room. In previous practice, 450 pound rolls of wire were carried by fork truck, one roll at a time, and stacked at one end of the department. When any machine needed wire, the machine operator had to roll a bundle from the supply to the machine, lift it manually and place it on the empty reel. Now Louden equipment ends all this waste of time and the ever present chance of physical injury. Louden handling delivers the stock wherever needed easily, swiftly and safely.

When you have a materials handling problem or plant problem involving lifting and transporting loads, call on Louden for suggestions. Louden's unparalleled experience and proven engineering leadership combined with Louden's broad line of equipment can save time and mistakes. Write or wire today.

Get the latest information on the best in modern materials handling systems. Write today for your copy of "Economic Material Handling," a 52 page book full of how-to-do-it ideas. If you are interested in automation, ask for the new book on Louden Automatic Dispatch, "Automatic Materials Handling." With either you will receive the latest information on Louden Shok-Pruf Electrification, new safety in power for cranes and monorail systems.



Louden

MONORAIL & CRANES

THE LOUDEN MACHINERY COMPANY

9302 Broadway, Fairfield, Iowa

A Subsidiary of Mechanical Handling Systems Inc.

SINCE 1867... THE FIRST NAME IN MATERIALS HANDLING

Circle 78 on Reader Service Card for more information



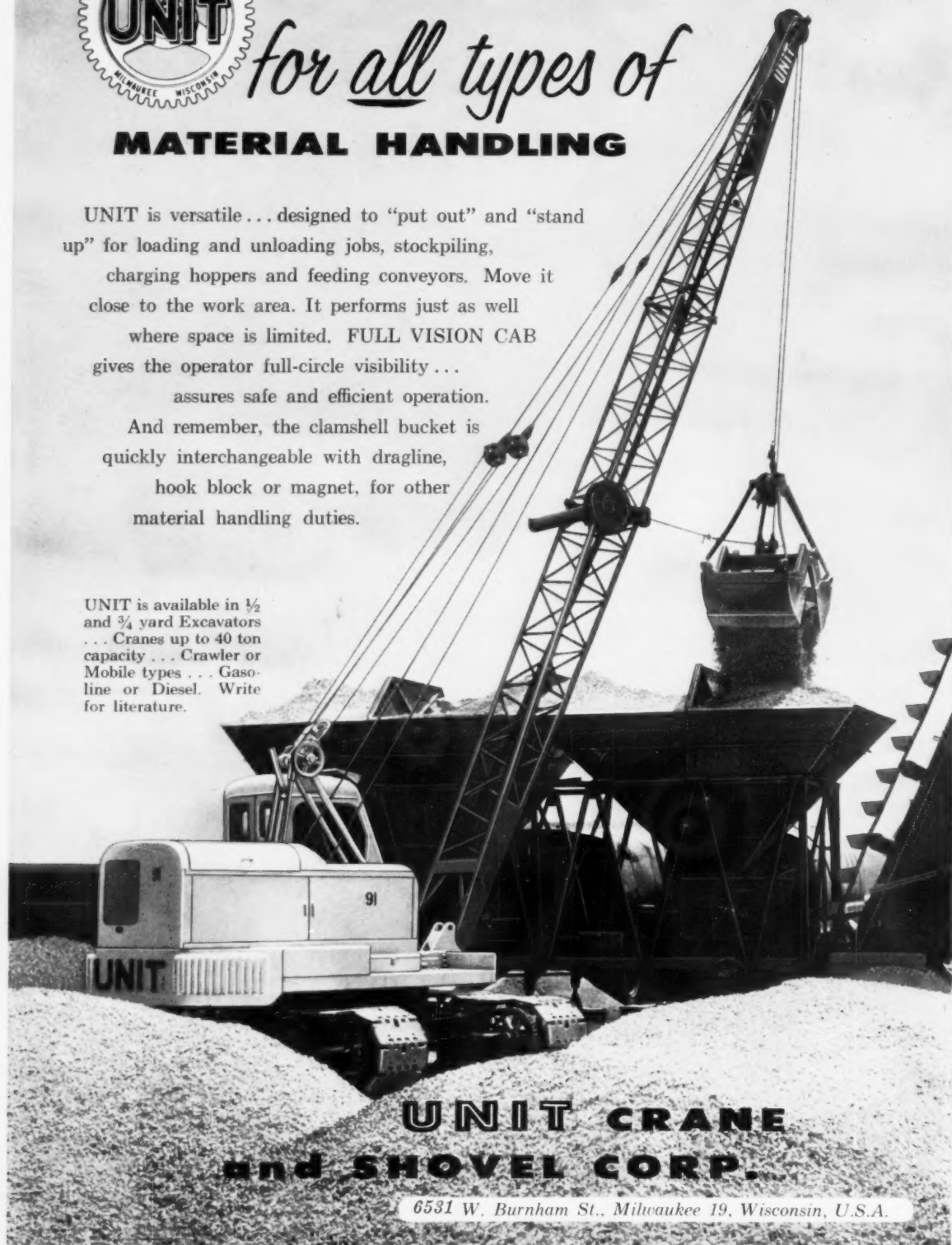
for all types of **MATERIAL HANDLING**

UNIT is versatile... designed to "put out" and "stand up" for loading and unloading jobs, stockpiling, charging hoppers and feeding conveyors. Move it close to the work area. It performs just as well where space is limited. FULL VISION CAB gives the operator full-circle visibility...

assures safe and efficient operation.

And remember, the clamshell bucket is quickly interchangeable with dragline, hook block or magnet, for other material handling duties.

UNIT is available in $\frac{1}{2}$ and $\frac{3}{4}$ yard Excavators... Cranes up to 40 ton capacity... Crawler or Mobile types... Gasoline or Diesel. Write for literature.



UNIT CRANE and SHOVEL CORP.

6531 W. Burnham St., Milwaukee 19, Wisconsin, U.S.A.

Circle 116 on Reader Service Card for more information

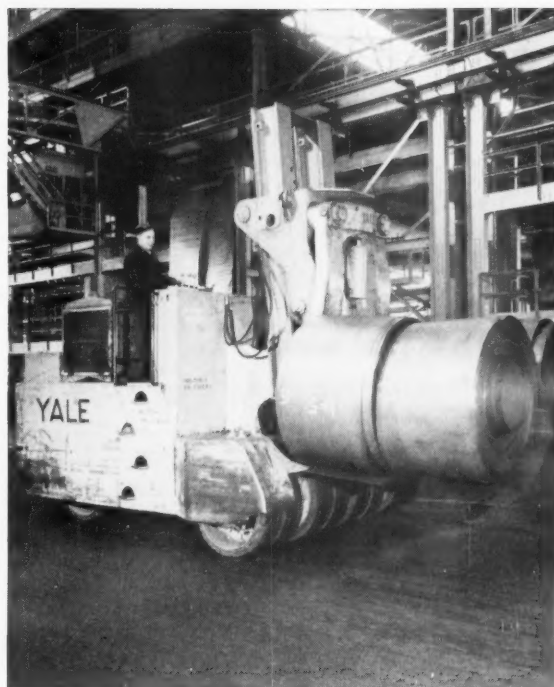
A8-5023

MATERIAL HANDLING ENGINEERING



Pneumatic tires

B.F. Goodrich makes a complete range of sizes and variety of tread designs, including the new All-Purpose.



Solid Tires

Pressed-On Solid in regular or Deluxe Cushion, or Vulcanized-On Solid — which is right for you? What tread design? What compound?

Which industrial tires are right for your job?

Free B.F. Goodrich  Analysis tells you

Can save you as much as 50% on tire costs!

Problem: There are many different industrial tire types, sizes, tread compounds and tread designs. Each one is built for a specific materials handling job. Do you know which tires are right for *your* job?

Solution: Without cost or obligation your B.F. Goodrich Tire and Wheel Analysis man will study your equipment, loads, hauling surfaces and other special problems you have. He'll recommend the right tires for you to use—recommendations that are unbiased because B.F. Goodrich makes a *complete* line of industrial tires.

Result: You can save as much as 50% on industrial tire costs, as much as 20% on maintenance costs. Mail the coupon today for your FREE B.F. Goodrich TW Analysis.

A special consulting service is available to manufacturers of materials handling equipment.

Specify B.F. Goodrich tires when ordering new equipment

B. F. Goodrich Tire Company
A Division of The B. F. Goodrich Company
Department TW-742, Akron 18, Ohio

I would like further information on your FREE TW Analysis.

NAME _____

COMPANY _____

STREET _____

CITY _____ ZONE _____ STATE _____



Smileage!

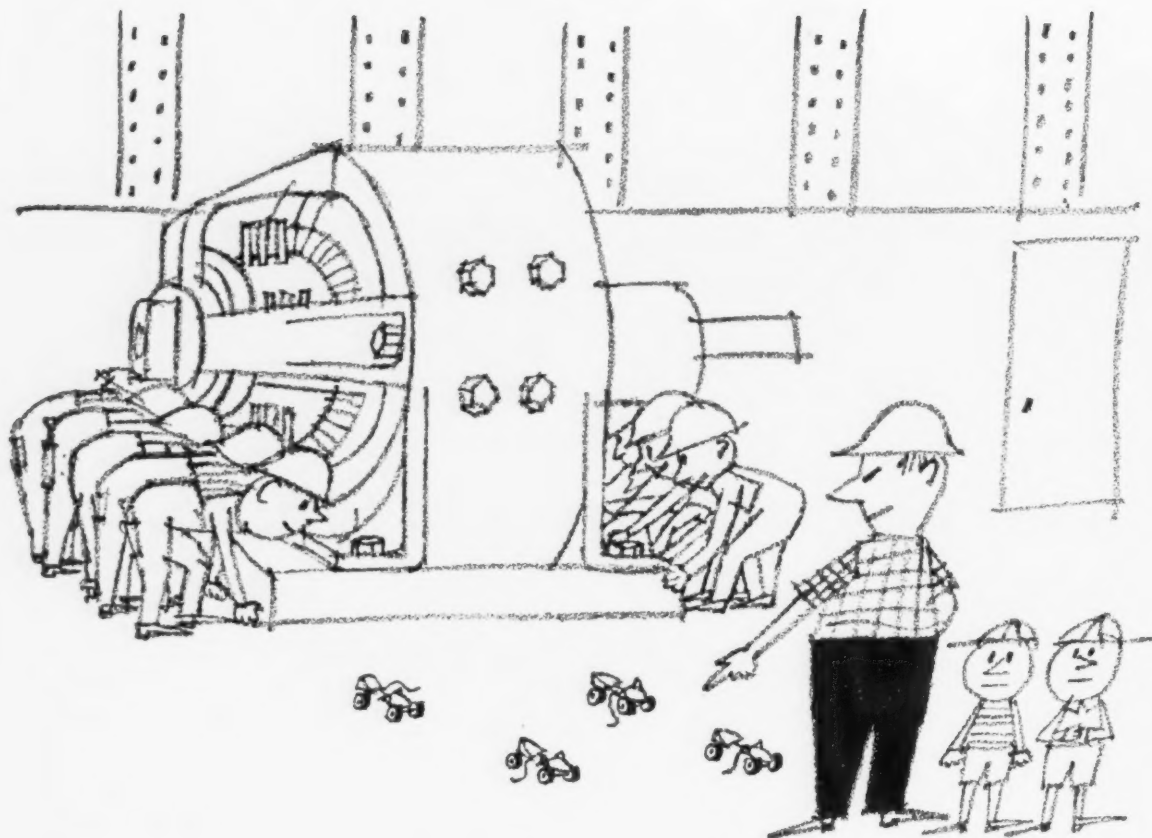
B.F. Goodrich *industrial tires*

Circle 64 on Reader Service Card for more information

FEBRUARY, 1959

© The B. F. Goodrich Company

one
way
to move
a
generator...



There are other ways. Much safer, surer, much simpler. Roebling Wire Rope Slings, for example. A complete line designed to meet materials-handling needs in every respect.

So complete, in fact, that the standard Roebling Slings fill a 48-page book. They are made in a wide range of sizes and types, available with a variety of end attachments.

Available, too, is Roebling's Sling Engineering Department; ready to analyze your special lifting needs, and design and build special slings to do the job.

In any case, you'll find Roebling Slings:

Circle 102 on Reader Service Card for more information

All-Purpose, Roegal® Cable-Laid and Flat-weave are made for steady service and stability under load. Your Roebling salesman or distributor knows *all* about Roebling Slings. Ask him about them.

When sending for the Roebling Wire Rope Sling catalog, the address is: Wire Rope Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey. Ask for A-938. Thank you.

ROEBLING

Branch Offices in Principal Cities
Subsidiary of The Colorado Fuel and Iron Corporation



MATERIAL HANDLING ENGINEERING

Circle 123 on Reader Service Card➤

NEW Yale Warehouser builds profits 3 ways

- (1) 24-volt system speeds operation cycles (2) Advanced design increases operator efficiency (3) Rugged construction means more time on the job

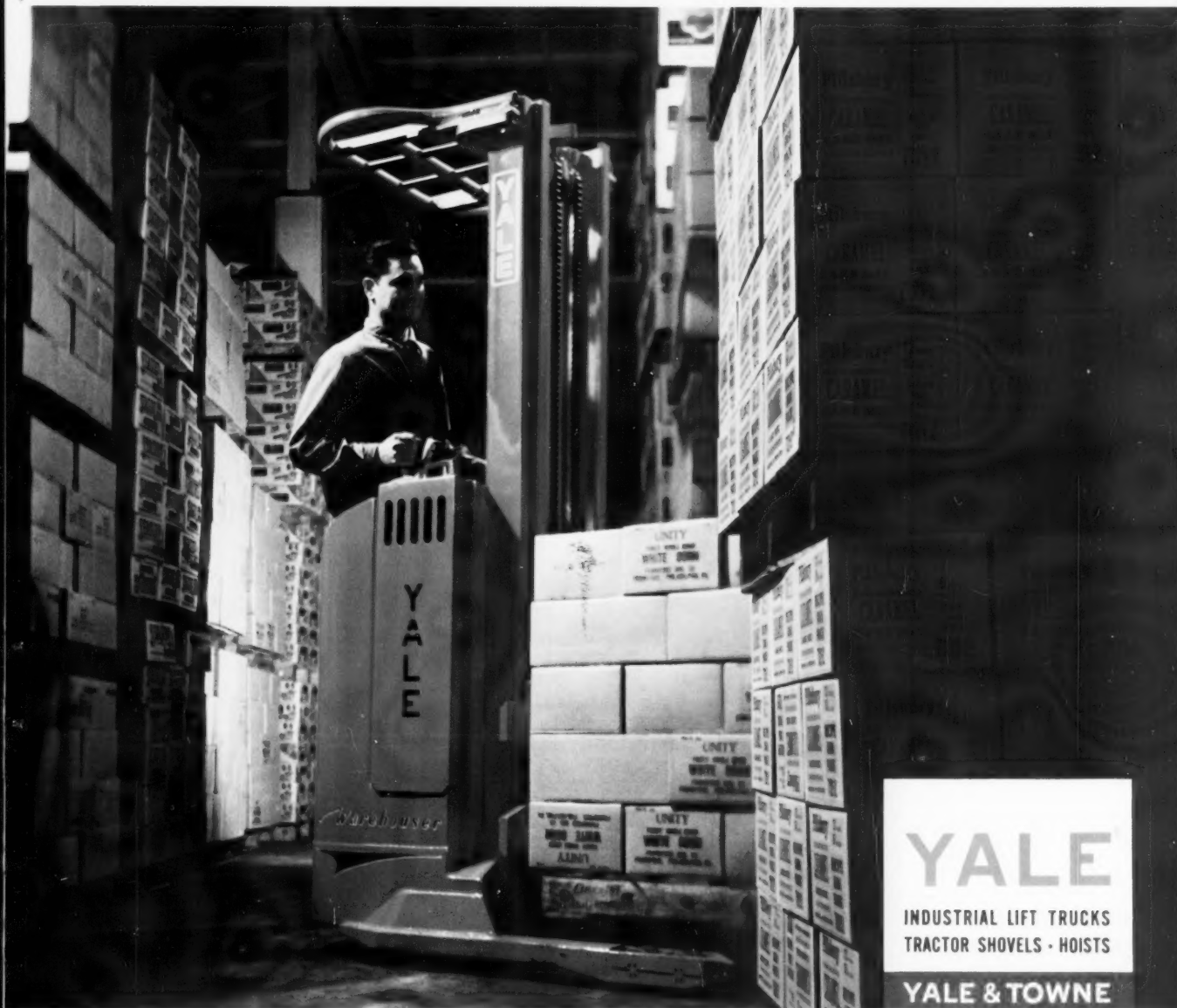


There's more power in the new Yale Warehouser! 24-volt battery provides faster lift and travel! Faster operation cycles! And your operator will be less fatigued at the end of the day. He has comfortably positioned, easy-to-operate controls! This precision control plus increased visibility protects against product damage.

Your new Yale Warehouser spends more time on the job! More days on the job! Operational maintenance is minimized because all components are in one fully-accessible compartment.

More years on the job! Construction is durability itself! Service access doors protected against bumps! Frame, chassis, outriggers and channels are a single welded unit.

This new Yale narrow aisle truck is available in straddle and Extend-A-Fork models—in capacities of 2,000, 3,000 and 4,000 lbs. Standard 12-volt models also available. Contact your Yale representative or write for brochure #1535H. The Yale & Towne Mfg. Co., Yale Materials Handling Div., Phila. 15, Pa., Dept. RT 1-H.



YALE

INDUSTRIAL LIFT TRUCKS
TRACTOR SHOVELS • HOISTS

YALE & TOWNE

Yale Materials Handling Division, a division of The Yale & Towne Manufacturing Company. **Manufacturing Plants:** Philadelphia, Pa., San Leandro, Calif., Forrest City, Ark.
Products: Gasoline, Electric, Diesel and LP-Gas Industrial-Lift Trucks • Worksavers • Warehousers • Hand Trucks • Industrial Tractor Shovels • Hand, Air and Electric Hoists

Your operator will be sold on the New Yale Warehouser



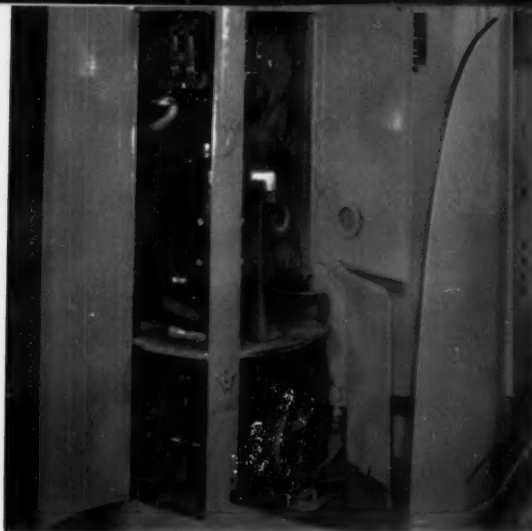
SEE HOW EASILY your operator will maneuver in a tight aisle. The new Warehousemen can perform in aisles as narrow as 6'. Extra powerful 24-volt battery takes no extra operating space. Rugged construction assures stability at all times.



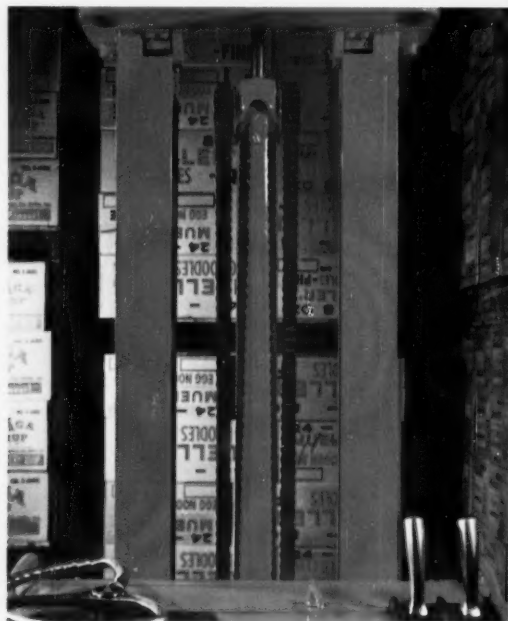
CONVENIENT CONTROLS. Steering wheel has directional compass and contoured handle. Pistol-grip controls for forward and reverse movement, lifting and lowering. Operator will be less fatigued even though extra power increases operation cycles.

YALE PRODUCTS MEAN EXTRA PROFITS TO INDUSTRY

Yale makes available to industry the complete lines of industrial lift trucks, tractor shovels and hoisting equipment that lower production costs—speed distribution—mean greater profit margins because you get faster delivery of your products into your market—can price your product competitively for increased sales.



YOUR MAINTENANCE MEN will find it easy to service the new Warehousemen. All components in a single compartment that opens wide. Access doors hinged in positions of protection against bumping—means no sprung doors. These and all the other advanced features of the new Warehousemen are standard equipment.



OPERATOR POSITION AND COMPACT DESIGN provide better visibility. He is positioned so that he can see forks and outriggers whether raised or lowered. This safety factor is buttressed by another—rubber sheathing protects operator at points of bodily contact.

YALE

INDUSTRIAL LIFT TRUCKS
TRACTOR SHOVELS • HOISTS

YALE & TOWNE



Robo-Lift's "tender touch" works for General Mills

Robo-Lift provides its gentle action to operators of General Mills. This bucket elevating conveyor can be depended on not to crumble cereals, not to make cake mixes lumpy.

Some of the 20 Robo-Lifts at General Mills' Toledo Plant feed raw materials into processing machines. Others carry finished products to packaging operations. Robo-Lift's versatile "up-and-over" operation is especially welcome in this one-floor plant where second-story top-loading is impossible.

Stainless steel buckets make Robo-Lift ideal for all food processing plants. They are easy to keep clean, help keep products pure. Overlapping edges prevent spilling—ease housekeeping problems.

Robo-Lift will provide gentle, sanitary, economical materials handling for your plant. Its "tender touch" will help keep your product quality high. Write for complete details.

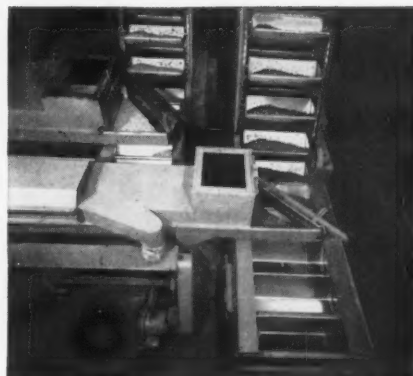


Send for the six page folder that tells the complete story of Lynch at General Mills.

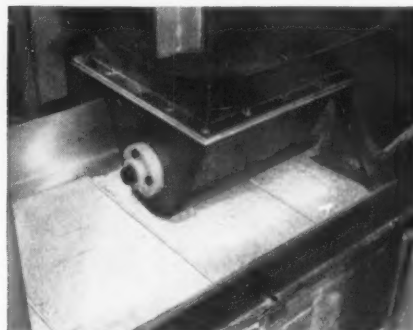
LYNCH CORPORATION
Anderson, Indiana
Manufacturing Engineers of automatic processing equipment for the glass, packaging, plastic and other industries

Atlanta • Chicago • Wallington, N.J. • Kansas City, Kansas • San Francisco

Circle 77 on Reader Service Card for more information



Filling Robo-Lift with dry cereal from drying trays and vibratory feeders. Robo-Lift carries cereal to sugar-coating process or to package-filling point.



Robo-Lift carries General Mills cake mixes from the mixing operation to the packaging point. The machine's gentle action prevents chunkiness—assures a smooth, uniform mix.



Among the many General Mills products handled by Robo-Lift are Cheerios, Coco Puffs, Kix, Trix, Hi-Pro, and 25 different cake mixes.





CLEANING A 34" PATH, the new Tennant "40" sweeps congested areas at normal walking speeds

New low-cost sweeper out-performs any other sweeper of its size

You've never seen a sweeper like this... the new **TENNANT Model 40**.

It's fast... 2 to 5 times faster than a man with a broom... and it equals "big sweeper" standards of cleanliness!

Operating at speeds up to 3 mph and cleaning a 34" path, the compact Model 40 can sweep about 1,500 square feet in 5 minutes time... averages 8,000 to 18,000 square feet per hour in most plants.

It's easy to use in crowded, congested areas. Turns in its own tracks.

Space-saving design (33" clearance) is ideal for narrow aisles and enables the Model 40 to go through standard doors.

It sweeps extra clean, gives results never before possible in sweepers of this size. Powerful vacuum-and-brush system draws dirt from cracks and gets fine dust that brooms miss. Assures almost 100% dust-free work.

WRITE TODAY for illustrated bulletins, photos, and performance data on this unusual new sweeper. **G. H. Tennant Co., 707B N. Lilac Drive, Minneapolis 22, Minnesota.**



**Industry's Most Widely Used
POWER SWEEPERS**



Model 80 Sweeper cleans 53" path



Model 50 Sweeper cleans 40" path



Electric Sweeper cleans 48" path

SPECIALIZED MAINTENANCE EQUIPMENT

Circle 110 on Reader Service Card for more information

LETTERS to the EDITOR

Likes New Look in MHE:

SIR:

Congratulations on the "New Look" for a most useful Book. Each issue has valuable data presented in a comprehensive manner.

The December issue followed in true form and as a result we are requesting two additional reprints of the article on Page 82 titled "Selecting Corrugated Containers", if available.

Peter Supp
S-K-F Industries, Inc.
Philadelphia, Pa.

Our cup runneth over.

Editor's Column Hits Home:

SIR:

I liked your editorial in the December 1958 issue. It's right down the center of the alley.

Gilbert I. Ross
Ross & Co.
New York, N. Y.

To refresh your memory, that's the one in which MHE Executive Editor Ed Leighton discussed the future relationship of worker, rate of output, and the company.

Which Conveyor Was First?

SIR:

While your article on the "Selection and Use of Belt Conveyors" in the December issue of MHE was a very good one, long distance belt conveying did not start in 1929 when a conveyor system moved Denny Hill from the heart of Seattle's business district.

Long distance belt conveying started in 1924 with a belt conveyor railroad approximately 5 miles long, consisting originally of 19 continuous belt conveyors from the Frick Colonial Mines to the Frick Colonial Docks on the Monongahela River.

You might be interested to know that this system is still in operation, and we have a picture of one of the carriers removed from the system after 35 years of operation.

Another first about the Frick job is the fact that three-pulley carriers were used—all wide belt conveyor installations prior to that time used five-pulley carriers.

We are not making an issue of this, but we would like to keep the record straight.

Fred S. Wells
Stephens-Adamson Mfg. Co.
Aurora, Ill.

In the interest of history, and for the record, thanks.

Forever Reprints:

SIR:

Please send me a copy of your report entitled, "What Management Should Know About Material Handling." This report appeared in the June, 1958 issue of MHE.

Robert J. Schmidt
AnSCO
Binghamton, N. Y.

Sent.

Advice on Warehouse Layout:

SIR:

We are planning on having constructed a modern produce warehouse, up-to-date in production and handling in every way.

We would appreciate your sending us any blueprints, pamphlets, sketches, or brochures you have available that might help us design the latest up-to-date type of layout.

Carl Adams, Jr.
Adams Bros. Produce Co.
Birmingham, Ala.

Through the years MHE has devoted a good share of space to this subject. Tear sheets of several articles have been sent, and should help considerably.

AMHS-SPHE Merger News

The Joint Merger Committees of the American Material Handling Society and The Society of Packaging & Handling Engineers have submitted a definite proposal containing the basis for merger to each board of directors. Both boards have approved the recommendations in principle. Further legal studies of the details of merging are being conducted.

NOW... "custom plan" your conveyor system with Standard

HANDIDRIVE

and Standard units for complete belt, "live" roller and gravity roller set-ups



Handidrive conveyors are made up of pre-engineered standardized units, such as drives, take-up units, end roller assemblies, intermediate framework, supports and hangers.

Easy to engineer and install

... at low cost

You can assemble and build a system "custom-planned" to suit your individual needs with Handidrive and other Standard units available out of stock. This service enables you to adapt and change the system from time to time to meet varying requirements as they arise, at exceptionally low cost.

Handidrive conveyors may be

individually leveled or inclined. Independent units may be purchased separately to construct power conveyors as desired.

Let Standard show you how to build or convert your own conveyor systems with Handidrive. Write: STANDARD CONVEYOR COMPANY. General Offices: North St. Paul 9, Minn.



Handidrive may be mounted at center or end. Standardized units may be purchased individually for extension to present conveyors, or as complete conveyors.



Send for Handidrive
Bulletin No. 64.
Write Dept. B-2.

Ask Standard how to cut costs with conveyors



GRAVITY & POWER
CONVEYORS

Sales and Service in Principal Cities



Circle 106 on Reader Service Card for more information



USEFUL LITERATURE

Custom-Print Your Own Shipping Tags:

Put an end to label buying and troublesome inventories, as well as brush stenciling tags and labels, with the Weber Dual 80 system. The Dual 80 machine uses replaceable rubber type to custom print any information of your choice, at up to 105 labels a minute. It can also be used for stencil printing, using stencil-type labels that are cut like carbon copies when the invoice is typed. A 4-page bulletin describes the system.

*Weber Marking Systems,
Div. of Weber Addressing
Machine Co.*

Circle 201 on Reader Service Card

Fast Electric Truck Maintenance:

Exide's statement that industrial batteries are the most economical form of fork-truck motive power is supported in Bulletins 5996 and 6207. Thirty seconds daily maintenance time is needed to put the battery on charge. It takes only three minutes to add water to the battery, the only weekly maintenance job required. A once per month washing schedule takes five minutes. Step-by-step photos show recommended sequence for carrying out each operation.

*The Electric Storage Battery Co.
Exide Industrial Div.*

Circle 202 on Reader Service Card

Truck Ups Storage Capacity 40%:

A manufacturer of building materials increased its storage capacity 40% without increasing total plant area with a "fleet" of 6 fork lift trucks. Five were equipped with special forks and hydraulic unloader attachments. Job Study No. 181 tells of the operation.

Towmotor Corp.

Circle 203 on Reader Service Card

New 1959 Chain Catalog:

A 98-page catalog features a complete line of roller chains, sprockets, conveyor chain attachments, plus valuable engineering formulas and installations.

Acme Chain Corp.

Circle 204 on Reader Service Card

You and Two-Way Mobile Radio:

Through two-way radio, a new dimension has been added to the use of material handling equipment, trucks,

construction equipment, railroads and other mobile equipment. Today thousands of business organizations utilize it as a tool to accelerate productivity. Details are given in "You and Two-Way Mobile Radio."

*Motorola Inc., Communications and
Industrial Electronics Div.*
Circle 205 on Reader Service Card

Utility Tractors:

A three-fold catalog, UT-103 gives a pictorial review of the D-series utility tractors. Specification and dimensions of the D-14 (35 horsepower, 4200 pound tractor), and the D-17 (54 horsepower, 5300 pound tractor) are included. Various approved attachments are illustrated.

Allis-Chalmers Mfg. Co.

Circle 206 on Reader Service Card

Horizontal-Grate Cooler:

Materials discharged from rotary kilns, sintering machines, roasters, and various types of furnaces are cooled efficiently by the Fuller Horizontal-Grate cooler. Bulletin CO-6 discusses advantages. A diagram of the cooler and photographs showing details of a typical installation are among the illustrations.

Fuller Co.

Circle 207 on Reader Service Card

Do-It-Yourself Dock Ramp:

Rite-Hite Model 8A fully automatic loading ramp is shipped to you knocked down. You put it together at your plant. All parts are precision made, easy to assemble with ordinary tools. Simple instructions included. This is a counterbalanced unit, with 10-ton capacity. Send for the descriptive brochure.

Rite-Hite Div., Loomis Machine Co.
Circle 208 on Reader Service Card

Re-usable Wirebounds:

Bulletin No. IP-58 of Generalift includes data on standard re-usable wire-bound pallet boxes. Step-by-step assembly pictures are presented, showing how one man can assemble and disassemble boxes in only a few minutes.

General Box Co.

Circle 209 on Reader Service Card

Powered Stacker:

A fully-powered stacker in the low price range is described. Full information is given on the Champion stroller,

electric fluid-drive fork-lift truck. It moves at speeds up to 2 mph with a full 1000 lb. load.

Tubar Lift Division of Uhrden, Inc.
Circle 210 on Reader Service Card

Good Warehouse Planning Gives Extra Space:

When a drug store business found it necessary to improve and enlarge its distribution warehouse, first emphasis was placed on an efficient system for getting goods in and out of storage. As a result, the company is saving nearly \$100,000 annually in direct labor costs. This User Report #20 is illustrated. The study outlines basic problems and tells how they were solved.

The Raymond Corp.

Circle 211 on Reader Service Card

History of Tape and Label Dispensers:

"The Derby Story" presents behind-the-scenes activities, with full color pictures of plant facilities, laboratories, and products. The brochure serves the dual objective of introducing Derby to new friends and explaining the company's operation more fully to friends of longer standing.

Derby Sealers, Inc.

Circle 212 on Reader Service Card

Automatic Pallet Loader:

Full information on the Series "300" automatic pallet loader. The manufacturer claims that the machine is already setting new records in speed and efficiency in some of the nation's largest and best known breweries, food processing plants, and soft drink bottling plants.

Alvey Conveyor Mfg. Co.

Circle 213 on Reader Service Card

Swivel Plate Casters:

Specifications of 5, 6, and 8 inch casters and their design features are listed in Form 52658, 2 pages.

Faultless Caster Corp.

Circle 214 on Reader Service Card

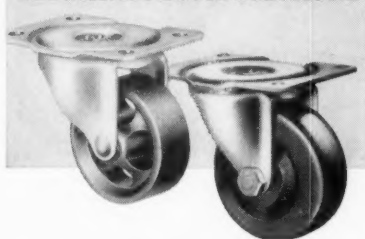
Special Purpose Hand Trucks:

Catalog 104, 34 pages, describes trucks for moving plate glass, plywood, sheet metal, and building materials; for pipe, tubing, bar stock, etc.; flatbed types for fruit, produce, and general

MATERIALS-HANDLING NEWS

NEW AND UNUSUAL APPLICATIONS OF BASSICK CASTERS THAT MIGHT BE ADAPTED TO YOUR HANDLING PROBLEMS

"61" caster 3" wheel load capacities
Hard tread: 225 lbs. Soft tread: 100 lbs.



Many factors affect caster load capacities

Types of wheels, floor conditions, speed of travel must be considered in selecting casters. Bassick conservative load ratings protect users and are based on average operating conditions.

HARD VS. SOFT WHEELS

Soft rubber tread wheels protect floors but limit load capacity. Good rule of thumb is that soft tread wheels will carry half the load carried by a hard tread wheel of the same size. Where floor protection is desired, go to a larger size resilient tread wheel.



Your Distributor has New Products

These new or improved products developed by Bassick last year may aid materials-handling in your plant.

Light Duty Floating Hub caster shown above for loads from 50 to 150 lbs.

Rust-resistant Zinc plating on all Bassick formed steel truck casters . . . at no extra cost.

New improved "non-marking" composition Atlasite wheel almost as strong as steel, far kinder to floors.

Keeping you up to date on new product developments is one of many ways your local Bassick distributor can help you.



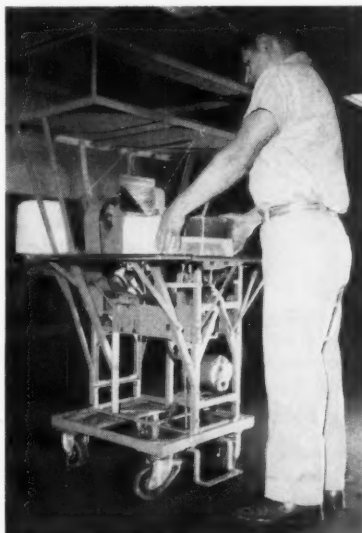
Semi-steel wheel
where floor
protection is
unimportant

Improved
Atlasite wheel
won't mark floors,
has high
load capacity

Rough floors cut load ratings

Select a wheel large enough to ride over tracks, door sills, elevators, other obstructions. For rough floors or in areas where there are objects or debris on the

floor, use a larger wheel with extra load capacity to secure proper ease of rolling and satisfactory performance. Two types of caster wheel are shown above.



Now it moves . . . Now it stands still

Sometimes it's convenient to move a machine to the job and then hold it steady in operation. R. R. Donnelly & Sons Company, a Chicago printer, solved the problem by putting this package-tieing machine on Bassick casters (for movement) equipped with combination wheel brakes and swivel locks (for standing still). Might be an idea here for you.



10" Series "93",
Capacity
10,000 lbs.

10" Series "FS",
Capacity
500 to 1000 lbs.

Speed and power affect carrying capacities

This heavy duty series "93" caster will support a static load of 80,000 lbs., but nothing like that load in action. Its rated carrying capacity, for normal slow movement of heavy equipment, is a conservative 10,000 lbs. or 15,000 lbs., for 8" and 10" sizes.

It is not designed to stand the strain of fast power pulled applications, however. These jobs, where speed may exceed 5 mph, normally call for a Trailer type of caster such as the Floating Hub swivel trailer caster rated at 500 to 1000 lbs. per caster.

9.1



THE
BASSICK COMPANY
BRIDGEPORT 5, CONN.
IN CANADA:
BELLEVILLE, ONT.



Circle 23 on Reader Service Card for more information



PARTS- HANDLING A PROBLEM?

SOLVE IT WITH NESTIER BOXES AND BASKETS

Nestier Boxes and Baskets are designed by experts to save you money everywhere small parts are handled in your plant. In the stock-room Nestiers stack rigidly to eliminate the need for racks. Empty Nestiers save storage space by nesting out of the way. Nestiers carry parts on pallets, conveyors, or moving belts from stock-room to assembly line without time-consuming transfers. At work stations Nestiers provide ample supplies in reach of fingertips. Workers waste no motion bending or stretching after parts. Nestier perforated or expanded metal Baskets cut degreasing time in half. Parts go direct from stamping machines, through degreasers on to your assembly line without a single handling operation. Nestiers are die formed in production quantities assuring uniformity at low cost. Nestier Boxes and Baskets are available in 5 sizes 12" to 36" long. Mail the coupon today for further information.



NESTIER CORPORATION
Subsidiary of THE METAL SPECIALTY CO.

Nestier Corporation B-2
4519 Este Ave., Cincinnati 32, Ohio

Please send me price list and complete specifications on Nestier Boxes and Baskets.

Name _____ Title _____

Company _____

Address _____

City _____ Zone _____ State _____



Circle 91 on Reader Service Card for more information

... USEFUL LITERATURE

utility use; general utility types for clothing and merchandise; deep tray trucks for paints; maintenance and wash tank trucks; and building and plant maintenance high ladder trucks.

Rol-Away Truck Mfg. Co., Inc.

Circle 215 on Reader Service Card

In Plant Container-Positioner:

Work-O-Matic is described as a material handling system offering distinct advantages in storage, moving, and handling of parts and materials in process. Catalog No. 89 shows how a positioning stand and multi-duty box combination increases production and eliminates stoop-bending methods.

The Union Metal Mfg. Co.

Circle 216 on Reader Service Card

Flip-Out Roller or Wheel Conveyors:

Points to remember when considering use of a wheel conveyor or a flip-out roller conveyor is one of the presentations in Bulletin MHC 58. Much general information is given, along with a listing of supports and stands available and weight charts.

Conveyor Systems, Inc.

Circle 217 on Reader Service Card

AC Reactor Crane Control:

Bulletin GEA-6867 describes this "7400 Line" AC crane control. Application data, information on installation and maintenance, performance curves, an explanation of static reversing control, and schematic diagrams of control systems are included.

*General Electric Co.
Industry Control Dept.*

Circle 218 on Reader Service Card

Hydraulic Hand Pallet Trucks:

Form 57, 2 pages, covers advantages and dimensions of fork-type pallet trucks of 2,000 and 4,000 pounds capacity.

Equipment Service, Inc.

Circle 219 on Reader Service Card

Braking Systems for Industrial Trucks:

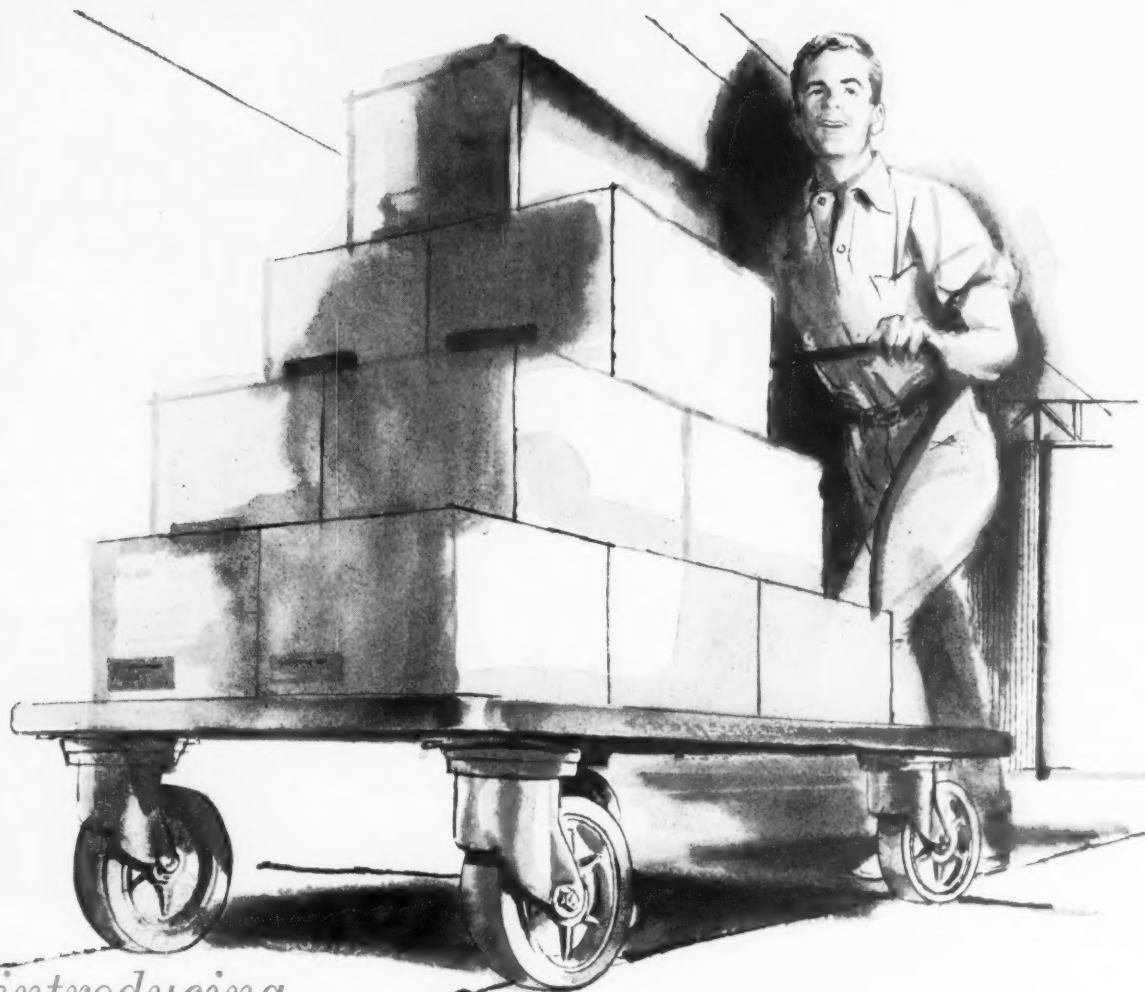
Explanation of a Tri-Safe braking system that, according to the manufacturer, actually incorporates the safety and positive control features of three completely independent brakes are given in EP1158 Engineering bulletin.

Elwell-Parker Electric Co.

Circle 220 on Reader Service Card

Conveying System Data:

Advantages of remote-controlled efficiency in conveying light products to




introducing...

"STANDARD" DISOWHEEL

The wheel that made history in powered material handling—DISOWHEEL®—is now available in a complete range of standard sizes for a wide variety of industrial uses. Each wheel conforms to the dimensional standards of the Caster and Floor Truck Manufacturers Association, and is supplied complete with high-grade roller bearings.

"Standard" DISOWHEEL, far quieter than steel, outwears rubber and most synthetics from 4 to 10 times. With load capacity 3 times as great as rubber, it won't mar floors, and won't chip or chunk out. Your trucks work longer, require less draw-bar pull, less maintenance.

Secret of DISOWHEEL performance is its DISOGRIN® tire—our remarkable polyurethane that's "strong as steel, resilient as rubber." This amazing material resists abrasion, yet rolls smoothly over any surface, with no damage to floors or load. Using the best bond available, DISOWHEELS won't break from the hub.

DISOWHEEL "Standards" are packaged for ease of handling, protection against damage. For powered trucks, all sizes from press-ons to pallet wheels are available. Make sure you specify DISOWHEEL, and look for the  emblem stamped on the hub. Anywhere you can use a wheel, use DISOWHEEL!

 **ISOGRIN**
INDUSTRIES

510 SOUTH FULTON AVENUE, MOUNT VERNON, NEW YORK
Offices: Los Angeles, Boston, Chicago, Detroit • Distributors everywhere

Circle 44 on Reader Service Card for more information

*HYSTER INTRODUCES 3
new models on pneumatics*

Challenger 60 70 80



WORK
INSIDE
BOXCARS

Heavy-duty
upright and
carriage
assembly

Highest
engine power
in its class

**POWER
STEERING IS
STANDARD**

Functional
design by
Henry
Dreyfuss

**"WIDE-ANGLE"
VISIBILITY**

Designed
for
safer
operation

**FULL LINE
OF OPTIONS,
ATTACH-
MENTS**

Exclusive
design
self-energizing
brakes

Unequalled
maneuver-
ability

**SPEED:
17.4 M.P.H.**

**LIFT:
60 F.P.M.
(Full Load)**

**New Dual-Range POWER SHIFT
HYSTAMATIC TRANSMISSION***

Developed for effortless operation
under all operating conditions

*Optional at additional cost

**EASY TO
SERVICE**

Larger
clutch for
longer life

**LOWEST
CENTER OF
GRAVITY**

Big
pneumatic
drive and
steer tires

Rugged
one-unit
frame

HYSTER®
INDUSTRIAL TRUCK DIVISION



See these new trucks at your nearby Hyster dealer, or write HYSTER COMPANY,
INDUSTRIAL TRUCK DIVISION, P. O. Box 847, Danville, Illinois.

FACTORIES: Danville, Ill. • Portland, Ore. • Peoria, Ill. • Kewanee, Ill. • Glasgow, Scotland • Nijmegen, The Netherlands • Sao Paulo, Brazil • Sydney, Australia (licensee)

Circle 67 on Reader Service Card for more information

Cost-cutting
FACTS & IDEAS
worth thousands of dollars!



Here . . . at your fingertips . . . are the dollar-and-space-saving facts about handling unit loads in narrow aisles. Learn how you can store more goods in your present warehouse. Increase capacity as much as 50% . . . make new floor space more productive with narrow aisles. This new 24 page reference book contains complete specifications of Raymond hydraulic and electric pallet handling trucks for every size and type of operation. Profusely illustrated. Send for your FREE copy today!

RAYMOND

The RAYMOND CORPORATION

3372 Madison St., Greene, N. Y.

FREE . . .

"Pallet Handling
in Narrow
RAYMOND Aisles"

| | |
|---------------|-------------|
| NAME _____ | TITLE _____ |
| COMPANY _____ | |
| STREET _____ | |
| CITY _____ | STATE _____ |

Circle 99 on Reader Service Card for more information

. . . **USEFUL LITERATURE**

any plant point are given in this latest Wendway data sheet. Elimination of multiple handling of products, and saving of man hours and floor space are among resulting advantages.

Union Steel Products Co.

Circle 221 on Reader Service Card

Steel Framed Trucks:

This 6-page bulletin depicts hand trucks, liftjack platform trucks, four-wheel platform trucks, and dollies.

The Fairbanks Co.

Circle 222 on Reader Service Card

Rider and Hand Truck Batteries:

Details on the firm's complete line of premium Slyver-Clad truck batteries are given in Bulletin IT-528. Plate and cell construction, weights, sizes and tray arrangements are covered for both rider and hand trucks. Connector data and a complete listing of the company's sales and service offices are given.

C & D Batteries, Inc.

Circle 223 on Reader Service Card

Rope Suspended Belt Conveyors:

Limberoller belt conveyor idlers are suspended between parallel stringers of steel wire rope instead of rigid support framing. Resulting advantages, according to the manufacturer, are lower costs; quick, simple installation; and reduced maintenance. The conveyors are described in bulletin NR-6C.

Joy Manufacturing Co.

Circle 224 on Reader Service Card

Take 4 to Find 7:

That's the title of a 12-page pocket-size folder on pressure sensitive tapes. It means: take 4 minutes to discover 7 advantages of Scotch brand filament tapes. The 7 advantages, discussed fully, are: Great Strength Without Rigidity; Cannot Cut Into or Crush Carton; Safe—Cannot Cut or Injure Workmen; Stays in Place; Faster Application; Provides Color; and Increases Production.

Minnesota Mining & Mfg. Co.

Circle 225 on Reader Service Card

Low Cost Bulk Handling:

Stories of how progressive companies are cutting material-handling costs with mechanized storage units are presented in Bulletin MU-100. Why handicap your modern methods with old-fashioned, non-functional bulk material handling? A complete specification chart of the Permaglas mechanized storage unit is printed.

A. O. Smith Corp.

Circle 226 on Reader Service Card

A Guide to Wire Stitching:

A comprehensive catalog on wire stitching is now available. The 28-page booklet describes the flat and arcuate methods of wire stitching, typical stitching operations, and gives details and specifications of over 30 stitching machines. It shows typical applications of box stitching, bagging, carding, labeling, book stitching, and metal stitching. It also includes complete data on accessory equipment and stitching wire.

Acme Steel Co.

Circle 227 on Reader Service Card

Specifications on Laminated Panels:

Learn all about Ply-Veneer panels from a 6-page folder just published. Ply-Veneer is made of distended Douglas fir veneer core, laminated top and bottom with heavy kraft liner board. Panels come in sizes up to the very largest needed for bulky items. Latest development is the #3 White, which has all the characteristics of the conventional panel, plus a printable surface. The literature gives complete specifications and a list of money-saving packaging uses.

Weyerhaeuser Timber Co.

Circle 228 on Reader Service Card

Grease Seal Working Manual:

Detailing development from laboratory to installation, bulletin 925 is the story of the Permaseal Idler. The book tells how the seal keeps grease in and dirt out. Drawings, photographs and detailed exposition make this a requisite working manual for anyone concerned with the problem of moving materials by conveyor whether it be in a mining or industrial capacity.

The Jeffrey Mfg. Co.

Circle 229 on Reader Service Card

"Technics" Material Handling System:

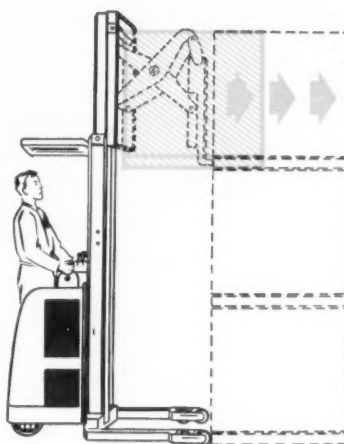
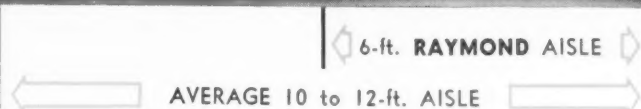
The story of "Technics"—the art of coordinating material handling through management to open new opportunities for profit is presented in a 56-page Rapistan brochure. Included are reprints of 18 articles that appeared in publications after editors viewed the applications of "Technics" in a conveyor manufacturing plant.

The Rapids-Standard Co., Inc.

Circle 230 on Reader Service Card

Instructions on Plant Layout:

A 16-page booklet gives you tips to help in laying out plants, warehouses, offices, etc. The method involves specially marked layout tapes and templates. The literature takes you through a step-by-step procedure for laying out any facility, from rough plan to completed layout. It also describes the Graph-A-Plan Kit, a complete time and labor saving kit that makes plant layout



CUT AISLES IN HALF
INCREASE STORAGE

by $\frac{1}{3}$ rd

Here's dramatic proof of the savings in space made possible with the Raymond Reach-Fork® truck. Right angle tiers in 6-ft. aisles* . . . forks extend into rack to pick up or deposit load . . . gives up to 50% more space.

The truck with "boarding house reach"
Telescopic or Non-telescopic Models
Capacities: 2,000 or 3,000 lbs.

Ask about lease rental
and deferred payment plans

*Aisle widths vary with load size.

SEND
TODAY!

The RAYMOND CORPORATION

3357 Madison St., Greene, N. Y.

- ☐ Send "Reach-Fork" truck bulletin
- ☐ Have RAYMOND representative call

| | |
|---------------|-------------|
| NAME _____ | TITLE _____ |
| COMPANY _____ | |
| STREET _____ | |
| CITY _____ | STATE _____ |

Circle 98 on Reader Service Card for more information

CUTS COST, GAINS SPACE BY...

Shuttling Parts Faster Tighter, Higher...



WITH
*** Walkie-Worklifter**

Globe-Union, Inc., known primarily for storage batteries and electronic components, is also one of the nation's largest producers of roller skates.

Squeezed by rising materials handling costs and dwindling storage space, they recently put three Walkie-Worklifters to work to remedy their dilemma. The Walkies enabled Globe-Union to efficiently use the valuable air space available in the storage area.

If you, too, have expanding storage problems, chances are Walkies can increase your capacity—economically—in the same manner. Why not write for details?

GLOBE-UNION INC.
Storage Batteries • Spark Plugs • Roller Skates • Centralab Radio Products
900 EAST KEEFE AVENUE
MILWAUKEE 1 • WISCONSIN

GEORGE C. FRENCH, JR.
VICE-PRESIDENT

Economy Engineering Company
4511 W. Lake Street
Chicago 24, Illinois

March 14, 1958

Dear Mr. Rhodes:

Recently, to reduce materials handling costs and gain badly needed floor space, we began using wire mesh containers for skate parts. At that time, three Walkie-Worklifters were purchased, one each for use within the punch press, plating and assembly departments.

The Walkies are used to stack the wire mesh containers five high (140") in six foot aisles, to remove them from storage and to place them on stands where they become hoppers for feeding parts to work stations.

Company officials feel the units do a materials handling job difficult to obtain from more expensive power trucks.

Sincerely,

George C. French Jr.



Automatic lifter and transporter. Battery operated with charger. Push-button remote control. Automatic safety brake. Over 100 model variations. Lifting ranges up to 120". Baseframe widths from 26". Heights from 78". Capacities 1000 to 2000 lbs. Prices from \$995.

Originators of materials handling equipment since 1901.

ECONOMY ENGINEERING

4524 West Lake Street, Chicago 24, Illinois

Circle 46 on Reader Service Card for more information

... USEFUL LITERATURE

easy for anyone. There are separate Graph-A-Plan kits for office or plant layout, statistical presentations, and organization and flow charts.

Labelon Tape Co., Inc.

Circle 231 on Reader Service Card

Helps You Simplify Storage Problems:

Storage when you want it and where you want it is the key to the Mini-Module prefabricated stock storage rack. Bulletin R-200-58 gives a complete explanation of the four sizes and four capacities available.

Jarke Mfg. Co.

Circle 232 on Reader Service Card

Kraft Paper Buyers Guide:

A kraft buyers guide is yours for the asking to aid in ordering kraft papers efficiently and economically. The guide contains a handy reference table on equivalent weights, roll weight, yards per roll, and ream weight. In addition, it gives you samples of the available basis weights.

Hudson Pulp & Paper Corp.

Circle 233 on Reader Service Card

Underground Tunnel Speeds Materials:

"Storage Battery Power" for Dec. 1958 features a story of the National Institute of Health at Bethesda, Md. One of the unusual highlights of the medical showplace is seldom seen by visitors. It is an underground tunnel. 1¼ miles long, used by electric tractors to distribute materials. Trailers pull medical supplies, food, laundry, laboratory animals, equipment and miscellaneous materials.

McGraw-Edison Co.

Thomas A. Edison Industries

Storage Battery Div.

Circle 234 on Reader Service Card

Bag Filling Up To Date?

A 4-page bulletin No. 1510 describes the Bemis Fastr-Weigh Bagger for pelletized, granular, and cube-type products. This bagger can weigh and fill 22 standard 50-pound bags a minute. It has a self-cleaning, self-aligning knife edge, and self-cleaning scale beam to assure weight accuracy to within two ounces. The bulletin contains engineering data and performance details.

Bemis Bro. Bag Co.

Circle 235 on Reader Service Card

Boltless Steel Shelving:

Penco T line boltless steel shelving is presented in bulletin B-40. Six styles of open and closed types of plain and

trated. Companion shelving equipment such as drawer case units, service counters, tool storage racks and shelving boxes are covered.

*Alan Wood Steel Co.
Penco Div.*

Circle 236 on Reader Service Card

Handling Newsprint Aboard Ship Film:

Complete handling steps involved in supplying water borne shipments of newsprint to two of the west coast's largest newspapers is the subject of a new 12-minute color film. Edge damage is eliminated and handling speed is increased. Information Service release P.R.833 tells how to obtain the movie for showing without cost.

Hyster Co.

Circle 237 on Reader Service Card

Magnet Crane Data:

Magnet weights and average lifting capacities are charted in catalog M-203. Equipment for magnet crane operation is illustrated. Other pictures show how power for the generator can be supplied by a direct drive off the crane engine or by a separate unit which includes both gasoline engine and generator.

Insley Mfg. Corp.

Circle 238 on Reader Service Card

Wirebound Drums Store Flat:

Generalift wirebound cylinder pallet boxes store and ship flat, and are easily assembled to form lightweight sturdy shipping containers. They consist of a top and bottom section, and a wirebound mat that forms the cylinder wall. Interlocking cleats hold firmly when secured with one band of steel strapping top and bottom. Capacities up to 1½ tons. You can re-use them several times. Complete literature available from the manufacturer.

General Box Co.

Circle 246 on Reader Service Card

Belt Control:

A guide using the hyperbolic principle to control rubber belt, steel band, and woven wire conveyors is described in a 6-page bulletin.

Knapp Mills Inc.

Circle 247 on Reader Service Card

Hydraulic Outrigger Data:

Hydraulic outriggers help to obtain top efficiency from a Maxi wheel mounted crane. The outriggers are operator controlled from the crane cab; there is independent operation of each float; and all hydraulic lines and valves are enclosed within the frame for protection. If desired, they can be furnished at both rear and midship positions.

The Maxi Corp.

Circle 248 on Reader Service Card

V-Belt Drive Information:

"How to Get Longer Life from V-Belt Drives", a 12-page illustrated manual, tells how to select, install, detect trouble, diagnose failure and correct drive troubles. A list of valuable maintenance tips is included. A suggested inventory survey check list for V-belt drives is given.

B. F. Goodrich Industrial Products Co.

Circle 239 on Reader Service Card

Caster and Wheel Manual:

Added to the 192-page No. 65 Darnell Manual are six additional items. Among them are the 60 series brake casters, 4L type casters with zero pressure tires and with pneumatic tires. Darnelloprene

(phenolic resin) wheels in 60 through 4000 series casters are included. Information on grey non-marking and electrically conductive Darnelloprene wheels; and 60 and 70 series wheels with graphite (self-lubricating) type bearings complete the new listings.


Darnell Corp. Ltd.

Circle 240 on Reader Service Card

How to Use Printing on Corrugated:

The newest addition to the H&D Little Packaging Library Series, this pocket-size booklet gives you valuable tips to help plan more effective printing on corrugated boxes and displays. It explores every phase of printing from

**KEEP
SMOG
Outside...**



**CONVERT TO
LP-GAS
with**

**BEAM
BUTANE-PROPANE
CARBURETION
EQUIPMENT**

SAVE MONEY TOO!

CLEAN: BEAM LP-Gas Carburetion virtually eliminates noxious fumes.

ECONOMICAL: Beam Carburetion conversion kits for gasoline engines TRIPLES ENGINE LIFE — SAVES up to 40% on FUEL — Cuts oil consumption 66% — Cuts motor overhaul and downtime to a minimum.

MODERN: BEAM is first with the latest improvements in LP-Gas carburetion developments.

PROVEN: BEAM is fastest growing LP-Gas carburetion manufacturer serving the Material Handling Industry.

SERVICE: WRITE FOR FREE LITERATURE AND NAME OF YOUR NEAREST DISTRIBUTOR.

BEAM PRODUCTS MFG. CO.

3040 Rosslyn Street • Los Angeles 65, California
CHapman 5-5791

Circle 138 on Reader Service Card for more information

WANT YOUR STORAGE AREA



Docker-Ideal for operations which require the operator to be constantly on and off the truck. Its compact stand-up end control design gives the operator quick, safe access and superior visibility, plus a short turning radius for maneuvering in congested areas.
Model FFE...1500 to 4000 lbs. capacity.



Transveyor low-lift platform and pallet trucks reduce aisle space and work easily in and out of trucks...are faster than the walkie type.
Model EPE (pallet type) 4000 to 6000 lbs. capacity.
Model ETWE (platform type) 4000 to 6000 lbs. capacity.

AUTOMATIC

*has your answer
in one of these maneuverable huskies*

One of the fastest ways to increase operating profits is to get the most out of existing plant space. For your particular problem, this might require higher stacking, narrower aisles or an industrial truck to work in extremely congested areas. In any case, Automatic has the answer in one of the versatile trucks shown here.

Whatever your special materials handling problem may be, there's an Automatic Electric Industrial Truck engineered for your requirements. Over 200

standard models are available, and many can be equipped with special attachments. You can count on your Automatic representative, an experienced materials handling engineer, for any technical help you need to select the best possible truck for your job.

What's more, your selection can be leased or purchased on convenient budget terms if you wish. Get all the facts. Fill out the coupon and mail it today.

Cost less to own...less to operate

- ☐ Rush complete information on Automatic's narrow-aisle truck. We are interested in Model _____
- ☐ Please send Transporter Facts and Factors.

Name _____ Title _____

Firm Name _____

Address _____

City & Zone _____ State _____



AUTOMATIC
TRANSPORTATION COMPANY
Division of The Yale & Towne Manufacturing Company
Department B-9A, 141 West 87th Street, Chicago 20, Ill.
WORLD'S LARGEST EXCLUSIVE BUILDER OF
ELECTRIC-DRIVEN INDUSTRIAL TRUCKS
Circle 17 on Reader Service Card for more information
MATERIAL HANDLING ENGINEERING

S-T-R-E-T-C-H-E-D ?



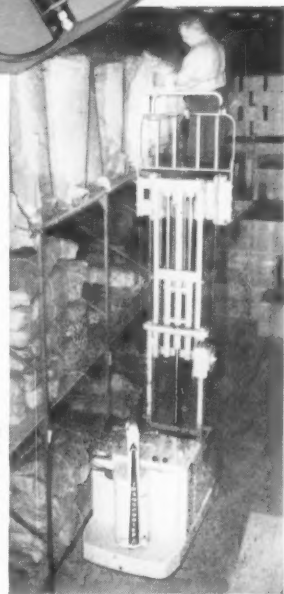
Transveyor Stacker works easily in 6' aisles; stacks loads high; moves more tons per hour in a minimum of maneuvering space. Model ESST...2000 to 4000 lbs. capacity.

Triple-Action Transveyor for compact stacking in narrow aisles. Model ESRF lifts the load, extends it forward and swings it 30° right or left...2000 to 4000 lbs. capacity.



Transporter low-lift pallet and platform trucks work swiftly and efficiently where maneuvering space is at a premium. Available with wide or narrow battery compartments. Model WP (pallet type)...capacity, 4000 lbs. and up. Model WW (platform type)...capacity, 4000 lbs. and up.

Transporter Cantilever-Type Stacker with remote-control mast and special platform expedites selection of orders. This truck performs all the functions of a rider-type machine at considerably less initial cost. More maneuverable for working in cramped quarters. Model WST...capacities from 1000 to 4000 lbs.

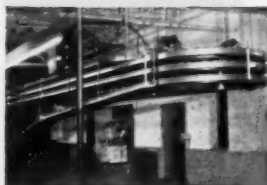


LOOK

HERE'S
THE NEW
DO-IT
YOURSELF



WENDWAY CONVEYOR SYSTEM



• Simple or Complex—Wendway unitized assemblies may be easily ceiling mounted to save valuable floor space.



• Wendway assemblies are ideal for all light production and processing work. May be castor mounted for full portability.



• Where solid belt conveyor is required, canvas, Neoprene, rubber, etc., can be supplied to meet the need.

Write
Today



UNION STEEL PRODUCTS CO.
ALBION, MICHIGAN

Circle 115 on Reader Service Card for more information

Wendway, the light product (linked wire belt type) conveyor system, is now available in complete, prebuilt assemblies—ready for installation in your plant by your own workmen.

Now—you save installation and supervision costs plus time and manpower. Why? Because Wendway unitized sections are all pre-engineered, prebuilt and guaranteed to operate flawlessly on practically any light product use.

It's so easy—Wendway assemblies are available in standardized powered straight sections, curves, switches, inclines, declines in 6", 9", 12", 15", 18", 24" and 30" belt widths. Curved sections of 90° or 180° and gearhead power units to match your needs. For heavier application, pre-engineered straight sections, equipped with *solid* belting, are available.

Write today for detailed information or conveyor system planning assistance. USP representatives will gladly supply the facts—without obligation.

ATTENTION DISTRIBUTORS!

A limited number of exclusive territories are still available. Contact USP for information.

Gentlemen:

Please rush me detailed information, specifications and prices on your Wendway conveyor assemblies.

Name _____

Company _____

Address _____

City _____ Zone _____ State _____

Please have your representative call at once ☐

... USEFUL LITERATURE

the basic box design to selection of corrugated, background, copy, illustrations, number of colors, and choice typography. It also tells you how to get better identification, how to build a brand image, how to plan family packaging and point-of-sale display.

Hinde & Dauch

Circle 241 on Reader Service Card

Dock Ramp Gives Automatic Leveling:

A dock ramp with a built-in "homing instinct" to return, automatically, to surrounding dock level is a feature of the Trans-O-Matic Ramp, Model TM-68-LL. Cargo handling operations are speeded by this ramp. Sales Bulletin IND-58-11 gives complete information.

Globe Hoist Co.

Circle 242 on Reader Service Card

Easily Converted Portable Lift Guide:

Accessories quickly convert the Booster for service as a portable elevator, platform truck, straddle fork truck, or shop crane. Bulletin L-22 lists 7 work areas for a portable lift. They are shipping and receiving, stacking, process handling, die handling, work positioning, maintenance and one man order picking.

Hartman Metal Fabricators, Inc.

Circle 243 on Reader Service Card

Which Truck?

That is the big question when setting up or revamping a material handling program. Finding the answer can be made easier if you properly analyze the job to be done. How to do this is one of the features of "Facts and Factors" booklet now available.

*Automatic Transportation Co.
Div. of The Yale & Towne Mfg. Co.*

Circle 244 on Reader Service Card

The Magic Ribbon That Does Almost Everything:

An accidental discovery that may revolutionize all forms of packaging is described in a 4-page bulletin just published. LU MO Package Saver Metallic Ribbon is a thin strip of aluminum foil running from top to bottom of cellophane bags. It mysteriously keeps the cellophane from becoming brittle, keeps the bags from breaking or puncturing during handling and storage. But the manufacturer claims still newer uses that may eventually make your foods taste better, shoes last longer, and give your car increased gas mileage. The simple machinery can be added to your present packaging line. The literature tells how it works.

LU MO Corp.

Circle 245 on Reader Service Card



★ THE ALL-NEW CLARKLIFT ELECTRIC

Photo courtesy of The UPJOHN Company

Now! Snail's pace to top speed...no jars, no jolts!

Entirely new! The only electric fork truck that provides smooth, "non-jerk" power-delivery under *all* working conditions.

On the all-new *Clarklift Electric* an infinitely variable speed control provides the *exact* torque necessary for different working conditions and assignments. On ramps, in congested areas, and particularly when inching or stacking . . . power is delivered with perfect regulation. Your driver has *complete* control of the travel speed of his

truck at all times, resulting in greater efficiency and safety than ever before possible.

A new upright, one lever for both lift and tilt, self-adjusting brakes, unmatched accessibility are just some of the new features. There are many, many more. Send today for a brochure giving full details. Simply write: New Electrics, Clark Equipment Co., Battle Creek, Mich.

**CLARK®
EQUIPMENT**

CLARKLIFT is a trademark of Clark Equipment Company.

New Invention Picks Up 40 Cu. Yd. Detachable Containers . . . 15-Ton Loads



Dinosaur picks up in excess of 30,000 pounds of granular material, white line inside container indicates load has not shifted.

DEMPSTER-DINOSAUR Combines Detachable Container Flexibility With Big Pay-Load Capacity

Unlimited Capacity

The proven savings of mechanically handled detachable containers have now been expanded to cover long, over-the-road hauls. Two DINOSAUR models are available for this work. One, for tandem trucks, handles 30,000 pounds; the other, for single axle trucks, handles 22,000 pounds. Special off-the-road models are available for loads limited only by the capacity of the truck.

For Docks and Flat Cars

Mechanically, the DEMPSTER-DINOSAUR is of extremely simple design. Components are a tipping frame, two hydraulic raise-and-lower cylinders and a double-acting cylinder which con-

trols all container movements. No chains, sheaves or cables are used in its operation. It is the only over-the-road system that can push and pull containers on and off docks or railroad flat cars. This makes it possible to use the DINOSAUR in conjunction with "boxy-back" containerized cargo rail shipments.

Many Sizes and Types of Containers are Available

DEMPSTER-DINOSAUR standard containers come in 21 sizes ranging from 14½ feet to 23½ feet in length and 10 to 41 cu. yd. capacity. Special cargo containers up to 35 feet, tank-type and stake side models are also available. Drop-down telescopic legs to hold container at dock height are optional on some cargo containers.

Free Booklet Offered

A free booklet which describes the operation of this new system in detail is offered by Dempster Brothers, the originator and only manufacturer of DEMPSTER-DUMPSTER Systems.

Mfd. By

Patents Pending

DEMPSTER BROTHERS, Inc.

Dept. F-1, Knoxville 17, Tenn.

Circle 40 on Reader Service Card for more information

Containerized Cargo, Waste & Raw Materials Handled by DINOSAUR

The newly developed DEMPSTER-DINOSAUR is a system of materials handling that employs giant containers up to 40 cubic yards and larger. It lends itself to any situation where bulk accumulations of raw materials, liquids, waste or finished products must be handled. Since one truck and one driver can automatically pick up, haul and dump or set down a number of containers, the DINOSAUR easily does the work of several trucks.



Dinosaur backs up to loaded container and engages it with lifting bail.



Container is hydraulically pulled up inclined tilting frame.



Container is pulled forward where it automatically locks into carrying position.



The Dinosaur hydraulically pushes a container off on a dock and inside a building for unloading.

AND APPLICATION CHART

memo

Send for this chart now — it shows the cost difference storage racks!

MEMO NO. 43-1411

MEMO NO. 43-1417

MEMO NO. 43-1417

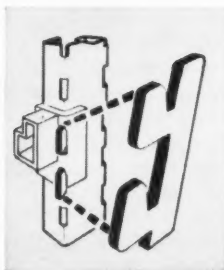
| | RECOMMENDED | AT 100 | RECOMMENDED | AT 100 | RECOMMENDED | AT 100 |
|----|--------------|--------|-------------|--------------|--------------|--------|
| | 0.08 1A | 34000 | 0.02 71 | 16200 | 0.01 71 | 71 |
| | 0.28 1B | 10770 | 0.08 71 | 5400 | 0.04 71 | 28 |
| | 0.58 1C | 5385 | 0.16 71 | 2700 | 0.08 71 | 14 |
| | 0.58 1D | 5385 | 0.32 71 | 1350 | 0.08 71 | 14 |
| | 0.58 1E | 5385 | 0.64 71 | 675 | 0.08 71 | 14 |
| | 0.58 1F | 5385 | 1.28 71 | 337.5 | 0.08 71 | 14 |
| | 0.58 1G | 5385 | 2.56 71 | 168.75 | 0.08 71 | 14 |
| 5A | 2960 0.01 36 | 3200 | 0.02 47 | 3100 0.02 51 | 2940 0.02 51 | 51 |
| 5B | 2740 0.02 36 | 3300 | 0.04 47 | 2970 0.04 51 | 2880 0.04 51 | 51 |
| 5C | 2560 0.04 36 | 3400 | 0.08 47 | 2840 0.08 51 | 2750 0.08 51 | 51 |
| 5D | 2410 0.08 36 | 3500 | 0.16 47 | 2710 0.16 51 | 2620 0.16 51 | 51 |
| 5E | 2310 0.16 36 | 3600 | 0.32 47 | 2580 0.32 51 | 2490 0.32 51 | 51 |
| 5F | 2160 0.32 36 | 3700 | 0.64 47 | 2450 0.64 51 | 2360 0.64 51 | 51 |
| 5G | 2010 0.64 36 | 3800 | 1.28 47 | 2320 1.28 51 | 2230 1.28 51 | 51 |
| 5H | 1910 1.28 36 | 3900 | 2.56 47 | 2190 2.56 51 | 2100 2.56 51 | 51 |
| 5I | 1810 2.56 36 | 4000 | 5.12 47 | 2060 5.12 51 | 1970 5.12 51 | 51 |
| 6A | 1710 0.01 36 | 4100 | 0.02 47 | 2030 0.02 51 | 1940 0.02 51 | 51 |
| 6B | 1610 0.02 36 | 4200 | 0.04 47 | 1900 0.04 51 | 1810 0.04 51 | 51 |
| 6C | 1510 0.04 36 | 4300 | 0.08 47 | 1770 0.08 51 | 1680 0.08 51 | 51 |
| 6D | 1410 0.08 36 | 4400 | 0.16 47 | 1640 0.16 51 | 1550 0.16 51 | 51 |
| 6E | 1310 0.16 36 | 4500 | 0.32 47 | 1510 0.32 51 | 1420 0.32 51 | 51 |
| 6F | 1210 0.32 36 | 4600 | 0.64 47 | 1380 0.64 51 | 1290 0.64 51 | 51 |
| 6G | 1110 0.64 36 | 4700 | 1.28 47 | 1250 1.28 51 | 1160 1.28 51 | 51 |
| 6H | 1010 1.28 36 | 4800 | 2.56 47 | 1120 2.56 51 | 1030 2.56 51 | 51 |
| 6I | 910 2.56 36 | 4900 | 5.12 47 | 990 5.12 51 | 900 5.12 51 | 51 |
| 7A | 810 0.01 36 | 5000 | 0.02 47 | 960 0.02 51 | 870 0.02 51 | 51 |
| 7B | 710 0.02 36 | 5100 | 0.04 47 | 830 0.04 51 | 740 0.04 51 | 51 |
| 7C | 610 0.04 36 | 5200 | 0.08 47 | 700 0.08 51 | 610 0.08 51 | 51 |
| 7D | 510 0.08 36 | 5300 | 0.16 47 | 570 0.16 51 | 480 0.16 51 | 51 |
| 7E | 410 0.16 36 | 5400 | 0.32 47 | 440 0.32 51 | 350 0.32 51 | 51 |
| 7F | 310 0.32 36 | 5500 | 0.64 47 | 310 0.64 51 | 220 0.64 51 | 51 |
| 7G | 210 0.64 36 | 5600 | 1.28 47 | 180 1.28 51 | 90 1.28 51 | 51 |
| 7H | 110 1.28 36 | 5700 | 2.56 47 | 50 2.56 51 | 0 2.56 51 | 51 |
| 7I | 0 2.56 36 | 5800 | 5.12 47 | 0 5.12 51 | 0 5.12 51 | 51 |
| 8A | 1010 0.01 36 | 5900 | 0.02 47 | 970 0.02 51 | 880 0.02 51 | 51 |
| 8B | 910 0.02 36 | 6000 | 0.04 47 | 840 0.04 51 | 750 0.04 51 | 51 |
| 8C | 810 0.04 36 | 6100 | 0.08 47 | 710 0.08 51 | 620 0.08 51 | 51 |
| 8D | 710 0.08 36 | 6200 | 0.16 47 | 580 0.16 51 | 490 0.16 51 | 51 |
| 8E | 610 0.16 36 | 6300 | 0.32 47 | 450 0.32 51 | 360 0.32 51 | 51 |
| 8F | 510 0.32 36 | 6400 | 0.64 47 | 320 0.64 51 | 230 0.64 51 | 51 |
| 8G | 410 0.64 36 | 6500 | 1.28 47 | 190 1.28 51 | 100 1.28 51 | 51 |
| 8H | 310 1.28 36 | 6600 | 2.56 47 | 60 2.56 51 | 0 2.56 51 | 51 |
| 8I | 210 2.56 36 | 6700 | 5.12 47 | 0 5.12 51 | 0 5.12 51 | 51 |
| 9A | 1010 0.01 36 | 6800 | 0.02 47 | 980 0.02 51 | 890 0.02 51 | 51 |
| 9B | 910 0.02 36 | 6900 | 0.04 47 | 850 0.04 51 | 760 0.04 51 | 51 |
| 9C | 810 0.04 36 | 7000 | 0.08 47 | 720 0.08 51 | 630 0.08 51 | 51 |
| 9D | 710 0.08 36 | 7100 | | | | |

| BEAM NO. A2 (1/4") | | | BEAM NO. A3 (1/4") | | | BEAM NO. A2 (1/4") | | | BEAM NO. A3 (1/4") | | |
|--------------------|----------------------|------------------|--------------------|----------------------|------------------|--------------------|----------------------|------------------|--------------------|----------------------|------------------|
| | REGISTRATION MARK | MEASURE POINT | | REGISTRATION MARK | MEASURE POINT | | REGISTRATION MARK | MEASURE POINT | | REGISTRATION MARK | MEASURE POINT |
| 70 | 14000 | 0.02 | 25 | 15000 | 0.02 | 38 | 14000 | 0.02 | 38 | 14000 | 0.02 |
| 74 | 14000 | 0.02 | 28 | 14000 | 0.02 | 41 | 14000 | 0.02 | 41 | 14000 | 0.02 |
| 78 | 14000 | 0.04 | 42 | 14000 | 0.04 | 47 | 14000 | 0.03 | 47 | 14000 | 0.03 |
| 82 | 14000 | 0.02 | 49 | 15000 | 0.01 | 49 | 14000 | 0.04 | 51 | 14000 | 0.04 |
| 86 | 14700 | 0.06 | 51 | 14000 | 0.06 | 53 | 14000 | 0.03 | 56 | 14000 | 0.04 |
| 90 | 12700 | 0.07 | 54 | 15000 | 0.07 | 57 | 14000 | 0.06 | 58 | 14000 | 0.05 |
| 94 | 12300 | 0.06 | 58 | 14200 | 0.06 | 61 | 14000 | 0.07 | 64 | 14000 | 0.06 |
| 98 | 11900 | 0.09 | 62 | 13200 | 0.09 | 65 | 12700 | 0.08 | 67 | 14000 | 0.07 |
| 102 | 11400 | 0.11 | 65 | 12500 | 0.10 | 67 | 14200 | 0.09 | 70 | 14000 | 0.08 |
| 106 | 10500 | 0.12 | 69 | 11400 | 0.11 | 74 | 13200 | 0.10 | 78 | 14000 | 0.09 |
| 110 | 8700 | 0.14 | 73 | 10500 | 0.13 | 78 | 12570 | 0.11 | 82 | 13200 | 0.10 |
| 114 | 9200 | 0.15 | 77 | 10700 | 0.14 | 82 | 11800 | 0.13 | 86 | 14100 | 0.12 |
| 118 | 9100 | 0.17 | 81 | 9900 | 0.16 | 86 | 11200 | 0.14 | 91 | 14000 | 0.13 |
| 122 | 8500 | 0.19 | 85 | 9100 | 0.17 | 91 | 10600 | 0.15 | 96 | 13600 | 0.14 |
| 126 | 7900 | 0.20 | 89 | 8400 | 0.18 | 97 | 10000 | 0.16 | 101 | 13200 | 0.15 |
| 130 | 7400 | 0.23 | 93 | 8000 | | | | | | | |
| 134 | 7200 | 0.25 | 96 | | | | | | | | |
| 138 | 6900 | 0.26 | 100 | | | | | | | | |
| 142 | 6600 | 0.26 | 104 | | | | | | | | |
| 146 | 6300 | 0.27 | 108 | | | | | | | | |
| 150 | 6000 | 0.27 | 112 | | | | | | | | |
| 154 | 5700 | 0.27 | 116 | | | | | | | | |
| 158 | 5700 | 0.27 | 120 | | | | | | | | |
| 162 | 5300 | 0.28 | 124 | | | | | | | | |
| 166 | 5000 | 0.28 | 128 | | | | | | | | |
| 170 | 4700 | 0.28 | 132 | | | | | | | | |
| 174 | 4400 | 0.28 | 136 | | | | | | | | |
| 178 | 4100 | 0.28 | 140 | | | | | | | | |
| 182 | 3800 | 0.28 | 144 | | | | | | | | |

Absolutely No Other Storage System —

Only Sturdi-Bilt racks offer Safety Load-Engineering...

***The One and Only Way to Know Your Installation
is Capable of Your Load Requirements!***



Sturdi-Bilt racks come to you 97% assembled. Float wedge construction eliminates nuts, bolts, tools, welding or special labor.

Sturdi-Bilt racks are designed to conform with "The Light Gage Steel Design Manual" of the American Iron & Steel Institute. Safety factor based on minimum yield is 1.85—safety factor based on ultimate yield is 3.05. To a structural engineer, there is no other acceptable way!

To you, it is your assurance that the proper design and precaution is used in construction of all Sturdi-Bilt products.

At Sturdi-Bilt, this is called Safety Load-Engineering . . . the sure way to eliminate guesswork and gambling on results where loading is concerned. Each component is load-rated. This includes a substantial built-in safety factor to allow for em-

ployee protection under the most extreme conditions. To illustrate this, the Load and Application Chart (pictured above) lets you automatically and confidently select the one and only bar and frame capable of safe, economical use in your operation. It's essential to any storage planning you have in mind.

STURDI-BILT racks are available for every storage need—pallet, bulk, skid, dies, drive-in—in either standard or new Hot Dip Galvanized Finish. Each rack offers you the famous "Float Wedge Construction" for quick, easy erection, rigidity and adjustability to meet changing needs. Before you rack—be sure to check Sturdi-Bilt. There is no substitute for fine quality.

Send For Your Free Copy of "The Load and Application Chart"
Attach coupon below to your letterhead or write:



Sturdi-Bilt

**FASTEST TO ASSEMBLE—
EASIEST TO ADJUST...**



1. Simply insert the Floating Wedge Lock ...
2. ... into the slots in the factory pre-fabricated upright
3. ... and lock to the horizontal safety support bars.

STURDI-BILT
Material Handling Division MHE 259
Union Asbestos and Rubber Company
332 S. Michigan Ave. Chicago 4, Illinois
U. S. Patent Nos. 2760650, 2815130

Circle 130 on Reader Service Card for more information

These features make the H-25

Big Capacity



Carries 2,500 pounds

It's not the size of the bucket . . . nor the weight you can lift that determines the capacity of a tractor-shovel. True capacity is the weight of the load you can *carry*. A tractor-shovel is designed to dig, carry and dump . . . to *MOVE* materials . . . and the more pounds you can *carry* per trip, the more material you move per shift.

The new H-25 "PAYLOADER" gives you a full 2,500 lb. **CARRY** capacity, which means you can safely use buckets up to 1 cu. yd. capacity, depending upon the specific weight of the material to be handled. Because the bucket tips back 40° at ground level, you can carry 2,500 lb. loads low and close to the machine . . . with better balance, stability, safety and less spillage.

All excess "dead-weight" has been eliminated and through balanced design, the H-25 can carry more pounds in the bucket than comparable machines weighing considerably more.

A wide choice of bucket sizes and types ranging up to 1 cu. yd. are available, to provide the most efficient handling of various weights of materials. Before you buy any tractor-shovel, be sure you know how many pounds it can **CARRY** in the bucket.

More Power



4,500 lb. breakout force

Two four-inch diameter hydraulic cylinders — the largest ever used on tractor-shovels of this size — power the bucket tip-back and develop a breakout force up to 4,500 lbs. at bucket lip. This is equivalent to $\frac{3}{4}$ the weight of the entire machine and is a valuable feature when needed to pry out big loads of heavy, compacted materials.

Powerful traction for bucket penetration is developed by the model H-25 because of the proper design balance between machine weight, engine power, torque-converter and low-range gear ratio.

The effectiveness and reliability of this traction is greatly increased by a power-transfer type of differential — an exclusive feature on the H-25 among tractor-shovels in its size range. With this differential, when poor traction conditions are encountered such as mud, oily floors and other slippery materials, the wheel with the better grip automatically gets most of the power. Wheel-spinning, tire-wearing action is reduced.

This combination of advantages enables you to get full capacity bucket loads in the toughest digging, and contributes greatly to the higher production capacity of the H-25.

HOUGH®



THE FRANK G. HOUGH CO.
LIBERTYVILLE, ILLINOIS

SUBSIDIARY — INTERNATIONAL HARVESTER COMPANY



HOUGH®



THE FRANK G. HOUGH CO.
LIBERTYVILLE, ILLINOIS

SUBSIDIARY — INTERNATIONAL HARVESTER COMPANY



PAYLOADER® more productive . . .

2 Speed Ranges



Both forward and reverse

The new model H-25 is the only tractor-shovel in its class that has two speed ranges both forward *and* reverse. In combination with the matched torque converter, this transmission gives you proper gear ratios for *every* phase of operation.

The low forward range assures slow, powerful traction for maximum bucket penetration while digging, and for climbing ramps with full loads. The low reverse range provides easy inching control for maneuvering in close quarters. The high speed ranges in both forward and reverse permit fast, economical travel in either direction. Shifting between speed ranges, up or down, is an instant finger-tip action without stopping. Shifting between forward and reverse is equally simple and effortless. There's no foot clutch and no clutching.

The torque converter is the large, heavy duty, two-phase type, specially designed and matched to the H-25 engine and transmission, providing high torque multiplication where needed, and greater efficiency in every kind of operation.

The big loads you get in a "PAYLOADER", plus the faster operating cycles, enable you to deliver more materials per shift at lower net cost per ton.

Power Steering



Shortest turning radius

Compact design, plus ease of control, enables the H-25 "PAYLOADER" to work and travel where many other tractor-shovels can't. It fits through narrow aisles, works in boxcars and other congested areas, because it has the shortest turning radius of any tractor-shovel near its capacity. In carry position, because of maximum bucket tip-back, its over-all length is also far less than most comparable machines.

Fast-acting, dependable power-steering is standard on the H-25, making this "PAYLOADER" the most maneuverable, easiest controlled machine available. Increased operator efficiency and reduced operator fatigue mean sustained output throughout the day.

THE FRANK G. HOUGH CO.
731 Sunnyside Ave., Libertyville, Ill.

Send full data on H-25 "PAYLOADER".

Name _____

Title _____

Company _____

Street _____

City _____

State _____

2-A-3

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SUBSIDIARY — INTERNATIONAL HARVESTER COMPANY



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NEWS ABOUT AMHS

LaTour Becomes AMHS President



Frank G. LaTour has been selected as president of AMHS to fill out the unexpired term of **Alfred J. Van Benschoten**. LaTour is manager, industrial engineering department, Mohasco Industries, Inc., Amsterdam, New York. Van Benschoten

had previously resigned the presidency due to ill health. The formal induction of LaTour as president will take place at 9 a.m. on January 17. This is the first day of the semi-annual board of directors' meeting, which will be held at the Hotel Cleveland in that city.

First News on Technical Sessions

First reports have been released on the technical sessions that will run concurrently with the MHI 1959 Exposition. More information and specific details will follow.

The session on Tuesday, June 9, will be sponsored by the Society for Advancement of Management:

Chairman: Warren King, associate editor, McGraw-Hill Publishing Co., and SAM national vice-president for material handling.

Speaker: Fred E. Harrell, general manager, Curtiss Wright Corp., Marquette Div., and SAM national treasurer. Subject will be "How To Sell Me on Material Handling."

Panel: Charles A. Thomas, assistant secretary, Standard Pressed Steel Corp. Subject: "The Type of Individual Best Suited To Carry Out Material Handling and Packaging Activities."

Edward C. Ebeling, vice president and general manager, The Leland Electric Co. Subject: "What Should the Material Handling Man Know about Business Economics."

Roland W. Puder, group supervisor, engineering department, E. I. du Pont de Nemours & Co. Subject: "How Do You Pay for New Equipment—Lease, Rent, or Purchase?"

The session on Wednesday, June 10, will be sponsored by American Material Handling Society, Inc.:

Speaker: Norman Shaffer, material handling engineer, Western Electric Co. Subject: "How To Get Personnel To Accept New Ideas in Material Handling."

Panel: Myron Miller, supervisor of safety, East Pittsburgh Works, Westinghouse Electric Corp., and regional vice president of American Society of Safety Engineers. Subject: "Safety Training for Material Handling Personnel."

Jack Vander Molen, Crane Company. Subject: "How Can Material Handling Solve Production Problems?"

Thomas Wharton, Containers Laboratories, Inc. Subject: "What the Material Handling Engineer Should Know about Packaging."

Information about the session to be held Thursday, June 11, will be forthcoming.

Learn about Shipping Liquids

Members of the Narragansett Chapter visited the Providence plant of the United States Rubber Co. In



the photograph they are shown inspecting a Sealtank—a collapsible container used for shipping and storing liquid products. **Neuberne H. Brown**, sales manager, Container Products Div., U.S. Rubber Co., spoke on "Bulk Handling and the Transportation Industry."

Attend Overhead Crane Seminar

Montreal Chapter members attended an overhead crane handling seminar which was conducted in cooperation



with the Dominion Bridge Co. on their premises at Lachine, Quebec. **R. D. Mutch**, chief crane designer for Dominion Bridge, spoke and conducted a plant tour.

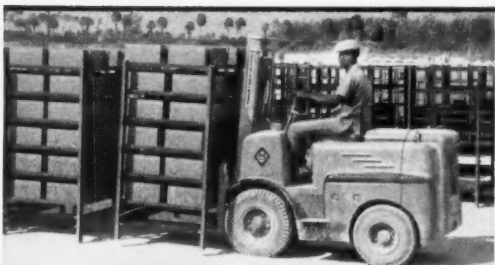
REMINDER—April 3, 1959, is the deadline for entries in the 7th Annual Clark Awards competition, and it's getting close. This year's subject is "Material Handling—Tomorrow's Solutions of Today's Problems." Your local AMHS chapter can give you entry details. Don't forget—10 cash prizes will be awarded, totaling \$5000.

IT'S A FACT:

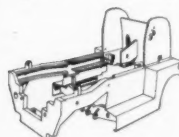
ALLIS-CHALMERS LIFT TRUCKS SAVE YOU MORE... MAKE YOU MORE!

HERE'S PROOF... When it comes to sustained high production over the years — ability to stay

on the job and out of the shop — Allis-Chalmers trucks have it! As these owners happily admit:



Downtime, None — That's the report of a Florida cement block manufacturer. His 4,000-lb lift truck has operated steadily for more than three years.



Reason: Rugged construction of Allis-Chalmers trucks which is typified by automotive-type frames.



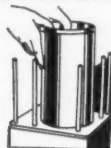
Maintenance costs were one-third less than with lift trucks previously used in a Michigan factory. "We used to replace an engine a year," says the vice-president. "Haven't replaced any in our Allis-Chalmers trucks."



Reason: The heavy-duty, industrial engine is the strongest and most rugged used in a fork truck.



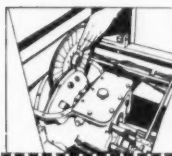
"They're tougher and require less maintenance," says the mechanic at a Wisconsin foundry. "I particularly like the overhead valves and wet cylinder liners — makes our job a lot easier."



Reason: Wet cylinder liners are easily replaced — no need to rebore.



"They're certainly accessible to work on," says the mechanic at a Missouri factory, "— although we have not had too much maintenance and no parts replaced at all so far."



Reason: A good example of accessibility: only 30 minutes is required to change a clutch.

Let your material handling dealer show you additional production and maintenance figures for Allis-Chalmers lift trucks that make their superiority a fact. Allis-Chalmers, Milwaukee 1, Wisconsin.



ALLIS-CHALMERS

BH-84

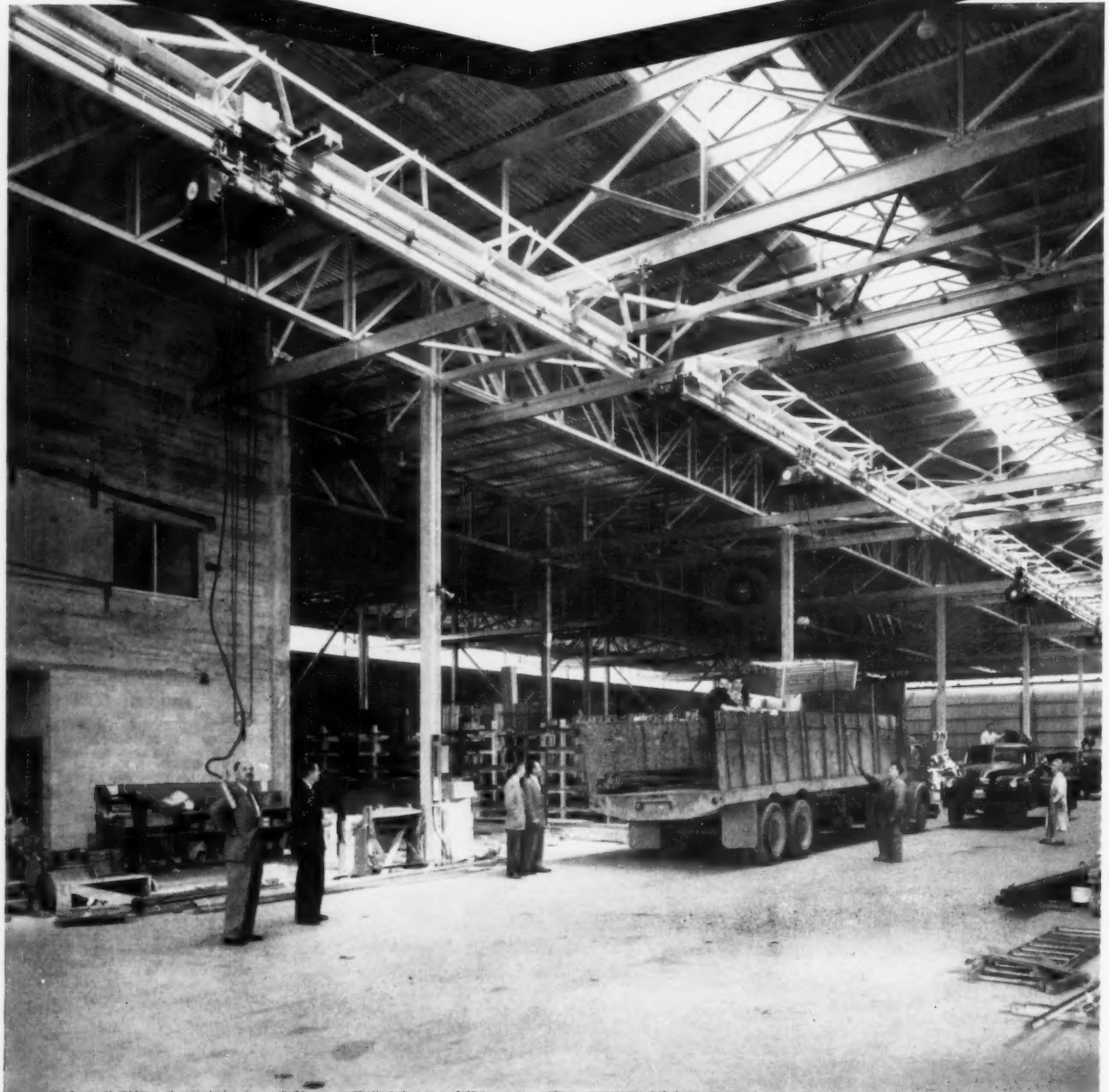
FEBRUARY, 1959

Circle 5 on Reader Service Card for more information



AMERICAN MONORAIL DOES IT!

**7 CRANES INTERLOCK...SPAN 6 BAYS
...340 ft. LONG!**



AMHS NEWS

Continued

ROCHESTER — **Edward J. Carstens** of the Eastman Kodak Co. addressed the December meeting of the Rochester Chapter. He spoke on linear programming—the mathematical way of figuring the shortest possible way to perform a material handling operation. Carstens said that this technique is being used successfully in equipment selection.

NEW YORK— The New York Chapter was addressed by **Derwood Hall**, Marine Operations Analyst, Marine Planning and Construction Div., Port of New York Authority. His subject was "Effect of Material Handling on Functional Pier Design."

LOS ANGELES—**Dr. Samuel Bois**, president of Bois, McCay and Associates, Ltd., was speaker at the January meeting of the Los Angeles Chapter. His subject was "Semantics for Material Handling Salesmen and Engineers."

CINCINNATI—"Opportunities Unlimited" in the materials handling field were described by **Edward H. Leighten**, MHE's executive editor, in a speech to the Ohio Valley Chapter. With the increasing population, more material handling equipment will be needed to facilitate the handling of the necessary increased production, Leighten pointed out.

OAKLAND, CALIF. — **Howard M. Palmer** of the Lewis-Shepard Corp. was speaker at the December meeting of the Northern California Chapter. This was the third meeting in a series built around new applications of material handling equipment. Subject will be the use of lift trucks and portable elevators.

PAWTUCKET, R.I.—The Narragansett Chapter was guest of Berkshire Hathaway Co. (New Bedford, Mass.) in a November plant tour. Numerous phases of warehousing and manufacturing were discussed by **Harris Murray**, material handling engineer at BH.

CINCINNATI—The value of material handling in the paper and printing industries was emphasized in a panel discussion and movie during the October meeting of the Ohio Valley Chapter. The meeting was held jointly with the Production Management Section of the Graphic Arts Association of Cincinnati. **Fred Sudhoff, Jack Wiedemer, Lou Meyer, Al Timmons**, and **Dave West** led the panel discussion.

FLINT—**C. H. Wolfe**, supervisor of the materials handling section of the Dow Chemical Company's engineering department was guest speaker at the October meeting of the Flint Chapter. Wolfe's subject was "Material Handling in the Chemical Industry."

ALBANY—The Albany Chapter scheduled a tour of the Schenectady Plant of the General Electric Co. for a January meeting. **Charles S. Carter** and **Thomas Power**, both of G.E., made the arrangements.



AMERICAN MONORAIL CAN DO IT FOR YOU!

Here's a metal distributing warehouse with no unloading docks! American Monorail cranes unload directly from an indoor railway siding along one wall and a 3-lane truck driveway thru the center of the building. Seven American Monorail cranes work in six parallel bays at loading or unloading.

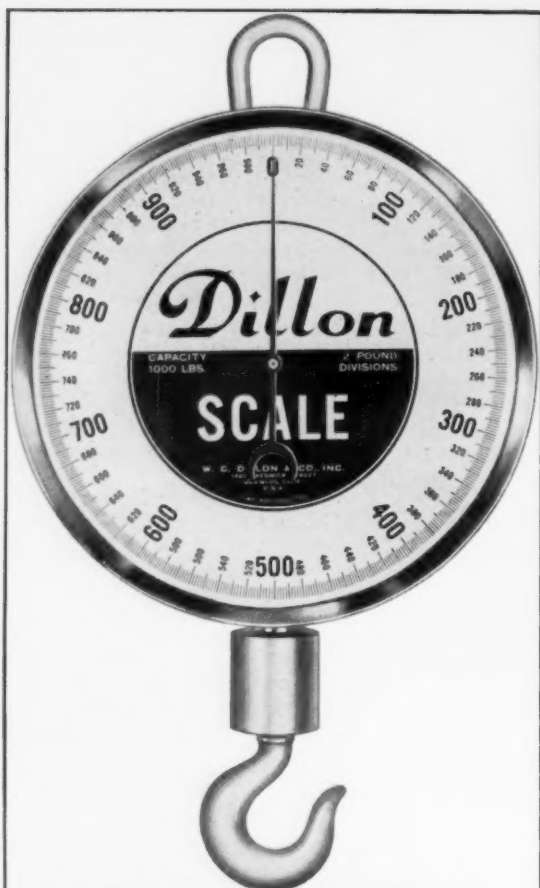
Transfer of loads from bay to bay poses no problem. **All cranes interlock at fixed transfer points to allow swift transfer of stock to any point in any direction** throughout this 340 ft. x 300 ft. warehouse!

A Monorail system can be tailor-made for your plant from standard parts. Write now for free literature.

AMERICAN MONORAIL

13129 ATHENS AVENUE
CLEVELAND 7, OHIO

MEMBER OF MATERIAL HANDLING INSTITUTE AND MONORAIL MANUFACTURERS ASSOCIATION



ACCURATE WEIGHT AT A MODEST PRICE

- ✓ Calibrated with **Certified** dead weights.
- ✓ 16" diameter dial. Easy to read—easy to see.
- ✓ Ball bearing swivel hook. 360° rotation.
- ✓ Dial protected with thick plastic crystal.
- ✓ Weighs only 42 lbs. May be carried in one hand.
- ✓ Operates on leverage principle. Scientifically correct!
- ✓ Rapid adjustment to cancel out tare loads.
- ✓ Shockless mechanism. No pointer flutter.
- ✓ Compact size. Uses a minimum of headroom.
- ✓ **Lowest** price despite **outstanding** quality.
- ✓ Capacities to suit every requirement.

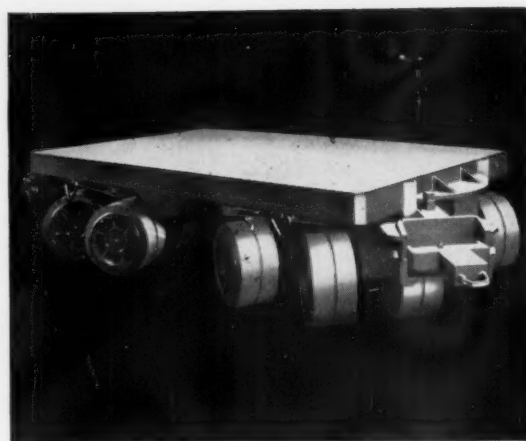
*Write
Today!*

FREE CATALOG
shows prices and
capacities and
tells how YOU can
save up to 22%
on labor costs.



W.C. Dillon & CO., INC.

14568-Q KESWICK STREET • VAN NUYS 8, CALIFORNIA
PHONE: STATE 5-3168



Ruggedly built for tough in-plant loads

Salem-Brosius' Phillips-designed heavy-duty trailers are built to take a beating. They are designed to safely and economically haul forgings, castings, ingots, slabs, plate, coils and other products requiring in-plant handling.

Designed in load-handling capacities from 6000 to 600,000 lbs, Phillips trailers feature front and rear axle fifth wheels for better steering, articulated axles, Timken wheel bearings, solid or pneumatic tires, and 4, 8, or 16-wheel models. They may be used singly or in trains. Write for further information.



Ask about rugged Phil-Dumps. They dump automatically, stack, and handle easily with lift truck.



Phil-Boxes are excellent for carrying and storing heavy materials. They stack and easily collapse.

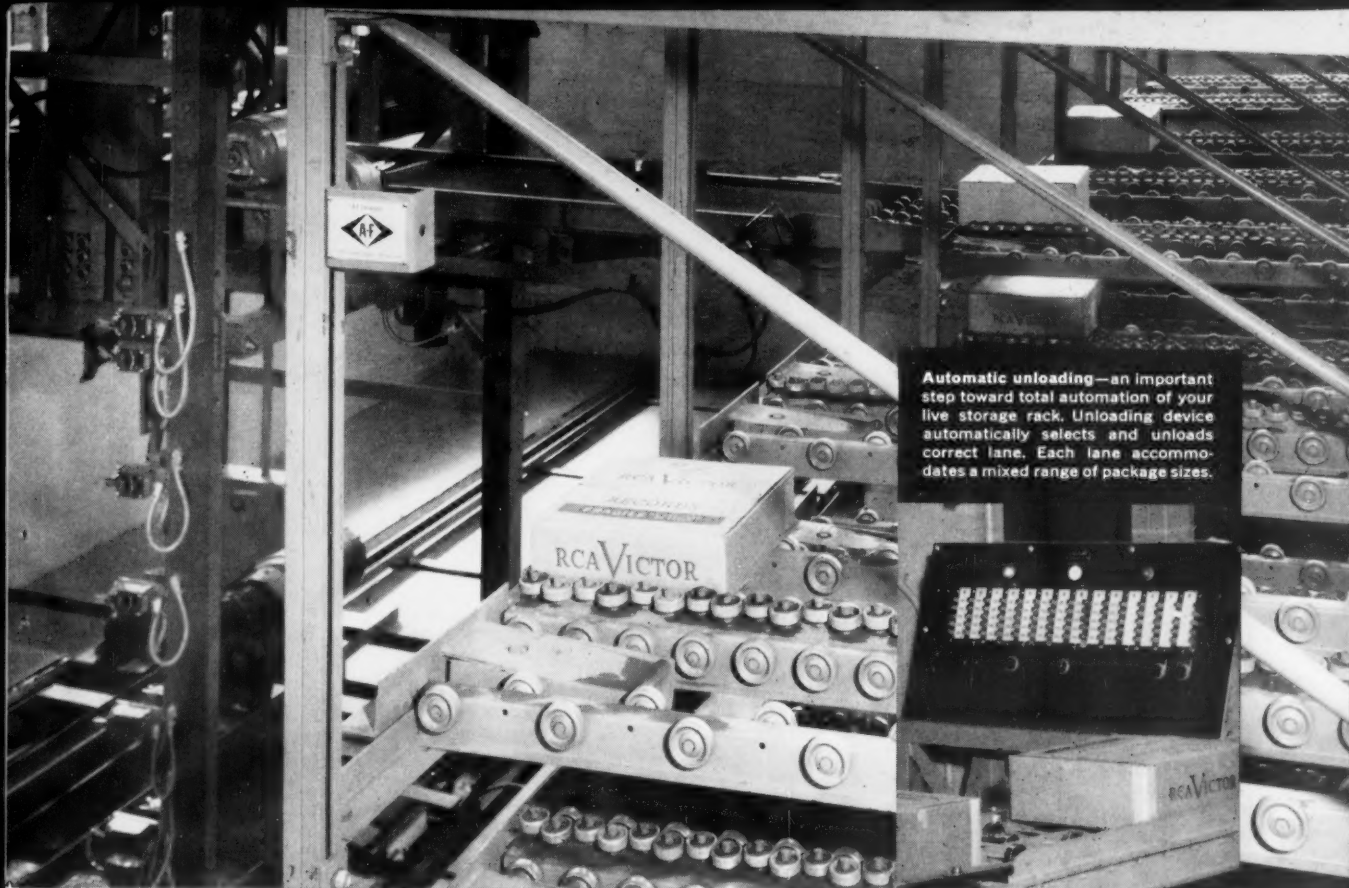
SALEM-BROSIOUS, INC.

13 Arch Street • Carnegie, Pa.

PHILLIPS MATERIALS-HANDLING EQUIPMENT

Circle 43 on Reader Service Card for more information

Circle 108 on Reader Service Card for more information



Automatic unloading—an important step toward total automation of your live storage rack. Unloading device automatically selects and unloads correct lane. Each lane accommodates a mixed range of package sizes.

Push buttons actuate removal from storage. Same operation can be accomplished by tape or card control, if desired.

A-F LIVE STORAGE RACKS

Automatic warehousing . . . by tape . . . by card . . . by push button.

Your AF Live Storage Rack *can be* totally automatic—even to the point where packages actually dictate their own route and “find” their own storage—then unload themselves after a specified period of time, as needed. The rack shown is unloaded by push-button remote control. One man (or woman) removes items from storage without moving from the control console. This same operation can be actuated by tape or card control if desired.

Perhaps your plant is ready for this kind of automation—or perhaps it's still a few years away. The important point is that when you invest in your live storage rack, you have purchased the basic element for your future automatic warehouse. It will give you great benefits today—whether loaded and un-

loaded by hand, by lift truck, or by other mechanical devices. Then, at a later date, it can be converted—simply by adding automatic loading and/or unloading devices.

Whatever degree of automation you specify, the fundamental advantages of live storage will be yours from the outset—orderly storage, elimination of needless walking and confusion, fool-proof first-in first-out control, space saving and many other benefits.

Our engineers will gladly survey your present storage facilities, make suggestions on cost-saving improvements and submit a proposal. In addition, we will help you determine just how automatic your system should be—for maximum benefit to you today and tomorrow. Write today for complete details.



A-F Conveyors

Custom Engineered Conveyor Systems
Packaged Conveyors—Wheel, Roller, Belt, Trolley
Pan and Rack Washers
Metal Cleaning and Processing Equipment

A-F founded the package conveyor business in 1901

The Alvey-Ferguson Company, Dept. UD-2, Cincinnati 9, Ohio
Circle 7 on Reader Service Card for more information



NEWS ABOUT SPHE

Your Society and You

by John Mount, president, SPHE



IT'S a little over a year now that the present slate of SPHE national officers have been in office. And we have almost another year to go. During our first year a lot of things have been accomplished. Some of them were planned; others came upon us unexpectedly. In a bulletin dated November 5 that was sent to each of you, I submitted a personal report of these accomplishments.

Many of you have sent me personal letters expressing your opinions. It was gratifying to get them. This is something I would like to stress. It doesn't matter so much whether you agree with my views or not. The important thing is that many of our members feel strongly enough about their Society to take the time to sit down and write me their views.

After all, as president of SPHE, I must know the thoughts and wishes of the membership in order to lead fairly, intelligently. That holds equally true for the other officers, and the board of directors. You, the member, have to tell us what you want if you want a representative governing body. Our new Constitution and By-Laws is a big improvement in this respect. But we still depend upon you, the member.

It's this simple: we can only grow in stature and professional recognition if our members want us to, and are willing to do a few basic things. One is to attend your local Chapter meetings regularly, and to participate in the

monthly programs. Another is to express your opinions to your officers—both local and national—on matters that interest you about the management, guidance, and growth of our Society.

One last point. I think some of us have been a little lax in increasing our membership. From time to time some of you have brought guests to your local meetings. But not often enough. This is something that we all should do. And then we should go one step further.

Having brought a newcomer to your meeting, make him feel welcome. Don't just invite him then forget he's there. Above all, see if you can interest him in becoming a member. The very fact that he was interested enough to come with you is an indication that he's interested in our Society. Just a little help from you will usually enroll him as a new member.

The same old story again. As in our democracy, the individual is the key to success. In order to take, you have to give.

HILLSIDE, N. J.—**Albert Kner**, design director of Container Corp. of America, addressed the Eastern Chapter at its January 12th meeting. He discussed New Techniques in Container Design. The December meeting was a Vendors' Night, with over 25 packaging and material handling suppliers showing their latest equipment. New vice president of packaging and technical committee chairman is **Jack A. Moore**, Package Research Laboratories, Inc.

CHICAGO—The Illinois Chapter has begun its professional educa-

tion program. The first meeting was a lecture on Package Testing. Principal speaker was **James Lar-kin**, testing engineer for Container Laboratories, Inc.

LOS ANGELES—A conducted tour of the Los Angeles Furniture Mart highlighted the January meeting of the Southern California Chapter. Members were shown the vast packaging and handling operations of the Furniture Mart, and then heard **Tony Dana**, traffic manager of the Furniture Manufacturers' Association discuss the latest developments in that field.

COLUMBUS, OHIO—Members of the Central Ohio Chapter heard **Jack Foeller**, Wood Conversion Co., at a recent meeting. Foeller talked on The Use of Cellulosic Cushioning Materials in Commercial and Military Packaging.

OAKLAND, CALIF.—A program on developments in the corrugated container industry was the feature of a recent meeting of the Golden Gate (formerly Northern California) Chapter. **Ralph A. Vetterlein** and **John A. Hartsock**, International Paper Co., were the speakers. Highlights of their discussion were: use of corrugated in the fresh fruit industry, developments in bag and carton combinations, and use of corrugated in bulk shipping.

BALTIMORE, MD.—Maryland Chapter officers for the coming year are as follows: **Ephraim Lazarus**, Empire Paper Co., president; **R. E. Bradshaw**, Olin Mathieson Chemical Corp., executive vice president; **Ronald V. Dolan**, Davison Chemical Corp., secretary; and **George E. Phillip**, Fiber Products Co., Inc., treasurer.

new ELPAR[®] CARGO SCOUT...



The Speediest Dock Truck Made

On the dock and in the plant, this all-new, all-around performer cuts minutes from every handling trip. The Cargo Scout has the fastest travel speed (up to 6½ m.p.h.) and the fastest lift speed (up to 72 f.p.m.) of any model in its class. Exceptionally compact and maneuverable, the Cargo Scout scoots into and out of the most confined areas quickly, easily. Fast electric truck acceleration, 360-degree turning and ease of operator mounting and dismounting are a few more of its time-saving features.

In 2,000- to 4,000-pound capacities, the Cargo Scout incorporates basic ELPAR electric truck dependability . . . your assurance of *twice* as many years of service as comparable gas models—with only *one-third* the operating and maintenance costs.

GET ALL THE FACTS

about the Cargo Scout, and the money-saving advantages of ELPAR electric trucks. Send for Cargo Scout Bulletins and the ELPAR Lift, "Gas vs. Electric Trucks."



THE ELWELL-PARKER ELECTRIC COMPANY
4232 St. Clair Avenue • Cleveland 3, Ohio

Twice the Life...One-third the Operating Costs

NEW Clarke

POWER SWEEPERS



Model CS-36, available with riding sulky

*do the work of up to 20 men
...cut sweeping costs up to 80%!*

Now Clarke adds power sweepers to its distinguished line of floor maintenance machines. And these new work-horses sweep cleaner, faster and more dust-free than any other sweeping method. They pick up all types of debris, cover up to 50,000 sq. ft. per hour, sweep right up to walls, maneuver easily in congested areas, drastically reduce man hours — and slash the cost of sweeping as much as 80%.

Advanced Clarke design offers a host of new efficiency features: **Unique forward-stop-reverse handle bar** eliminates shifting of gears, provides easy fingertip control. **Exclusive dust control system** protects premises and personnel. **Rotary broom control** adjusts for 23 broom positions, guarantees maximum broom life. **Rugged construction** assures years of dependable, time-and-money-saving service. Manufactured and guaranteed by Clarke, the best known name in floor machines.

Write for new brochure. Better yet, ask your Clarke power sweeper distributor to give you an on-the-job demonstration and show you how much you'll save with a Clarke.

Distributors: Select franchises still available in some areas. Write for details.



752 Clay Ave., Muskegon, Mich.
Authorized Sales Representatives and
Service Branches in Principal Cities
In Canada: Clarke Floor Machine Com-
pany (Canada), Ltd., 21 Advance Rd.,
Toronto 18, Ontario

Circle 28 on Reader Service Card for more information

CALENDAR of EVENTS

February 1-3

National Wooden Pallet Manufac-
turers Association
12th semi-annual meeting
Hollywood Beach Hotel
Hollywood, Florida

February 2-6

Material Handling Exposition and
Conference
Sponsored by Hamilton and Toronto
Chapters, AMHS
Automotive Building
Toronto

February 2-6

Midwest Work Course
Univ. of Kansas Ext. Center
Kansas City, Kansas

February 5-6

Industrial Engineering Dept., Illinois
Tech, and Armour Research Founda-
tion
Industrial Management Engineering
Conference
Illinois Institute of Technology
Chicago

February 6-7

University of California
Eleventh Annual Industrial Engineer-
ing Institute
U. of C. Campuses
Berkeley and Los Angeles

March 2-13

Industrial Packaging Short Course
Purdue University
Lafayette, Indiana

March 10-11

Canadian National Packaging Con-
ference
Packaging Association of Canada
King Edward Hotel
Toronto

March 11-12

9th Annual Iron & Steel Conference
Sponsored by Pittsburgh Section of
the Instrument Society of America
Pittsburgh, Pennsylvania

March 26

Fourth Annual Industrial Material
Handling and Packaging Con-
ference
Stanford University Campus
Oakland, California

April 13-17

28th AMA National Packaging Expo-
sition
International Amphitheatre
Chicago, Illinois

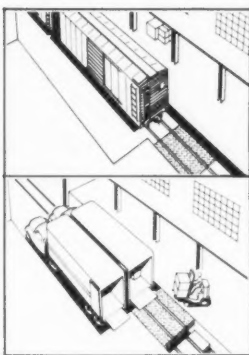
MATERIAL HANDLING ENGINEERING

It was MAN HANDLING then . . . it's GLOBE HANDLING now. This foundry, circa 1750, employed outmoded muscle and levers to lift heavy loads.

A reproduction of this engraving by Denis Diderot, famous French writer and philosopher, will be sent free on request. It is 8½x11 inches, suitable for framing. Fill in and mail the coupon below.



ONE GLOBE BRIDGE LIFT SOLVES TWO PROBLEMS



OiLIFT doubles as cross-over and loading dock

A New England manufacturing plant uses a single Globe OiLIFT to bridge a sunken railroad track and serve as a truck loading platform.

The elevated 10 by 14 foot platform, dual cylinder powered and having a capacity of 20,000 lbs., provides a short-cut route for plant traffic. Minutes of travel time saved many times a day for both men and equipment add up to impressive economies. Lowered 4½ feet, the platform's inset track sections index

with the spur track to permit free movement of rail cars.

When motor trucks back up to loading area, the Globe OiLIFT in raised position adds working space to the dock area. Two trucks are now loaded/unloaded where previously only one could be accommodated.

Wherever there is a material handling bottleneck, involving heavy (1,000 to 50,000 lb.) loads, Globe OiLIFTS can eliminate it. Platforms, power cylinders, etc., are tailored to your requirements; assembled from production line components.

GO

GLOBE

OiLIFTS

PLANTS: DES MOINES • PHILADELPHIA • LONG BEACH, CAL.

WRITE TODAY

"Case Studies in Modern Lifting"
—factual studies pertinent to YOUR business, including cost and time-saving data now available.

Globe Hoist Company
East Mermaid Lane at Queen Street
Philadelphia 18, Penna.

MHE-1001-BL

Please send me

____ Detailed information on Globe OiLIFTS for . . .
(describe application)
____ Reproduction of Diderot's foundry

NAME _____

ADDRESS _____

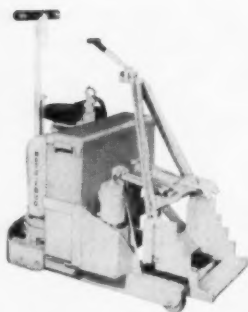
CITY _____ ZONE _____ STATE _____

WORLD'S MOST COMPLETE LINE OF INDUSTRIAL LIFTS AND RAMPS

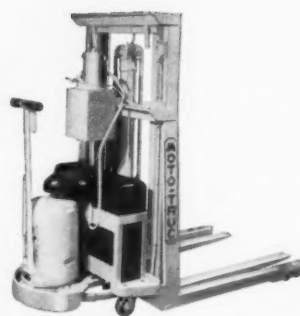
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FORK TRUCK



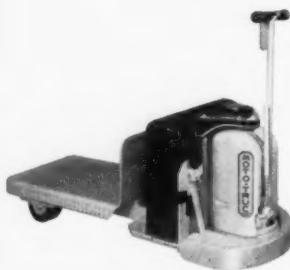
"GRIP-ALL" TRACTOR



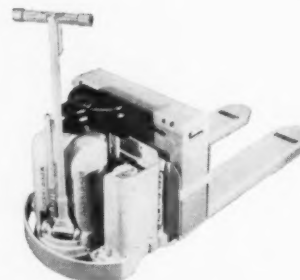
OUTRIGGER TRUCK



TOWING TRACTOR



LOW LIFT PLATFORM TRUCK



PALLET TRUCK

Which MOTO-TRUC "Walkie"* Would You Choose For Your Handling Job?

■ Naturally, you would choose the model that provides the most efficient handling. Your decision will be a simple matter of cost vs. performance.

To assure efficient handling, MOTO-TRUC has developed a wide range of models to meet every handling need. With more than 50 standard and special models to choose from, you can always be sure of outstanding performance.

Equally important, MOTO-TRUCS cost less to buy and operate. You can buy MOTO-TRUCS at prices well below those of competitive models. Yet, in spite of their lower initial cost, Moto-Trucs cost less to operate and maintain.

As the world's largest "Walkie" truck manufacturer, MOTO-TRUC offers you more handling performance for every handling dollar.

When you're buying a money-saving MOTO-TRUC let your local MOTO-TRUC handling engineer help you select the most efficient model for your job.

WRITE FOR MOTO-TRUC'S
GENERAL CATALOGS — 56W on
"Walkie" models; 56R on
small rider models.



Largest Exclusive Manufacturers of
"Walkie" and "Ride-A-Man" Trucks.

The MOTO-TRUC Co.

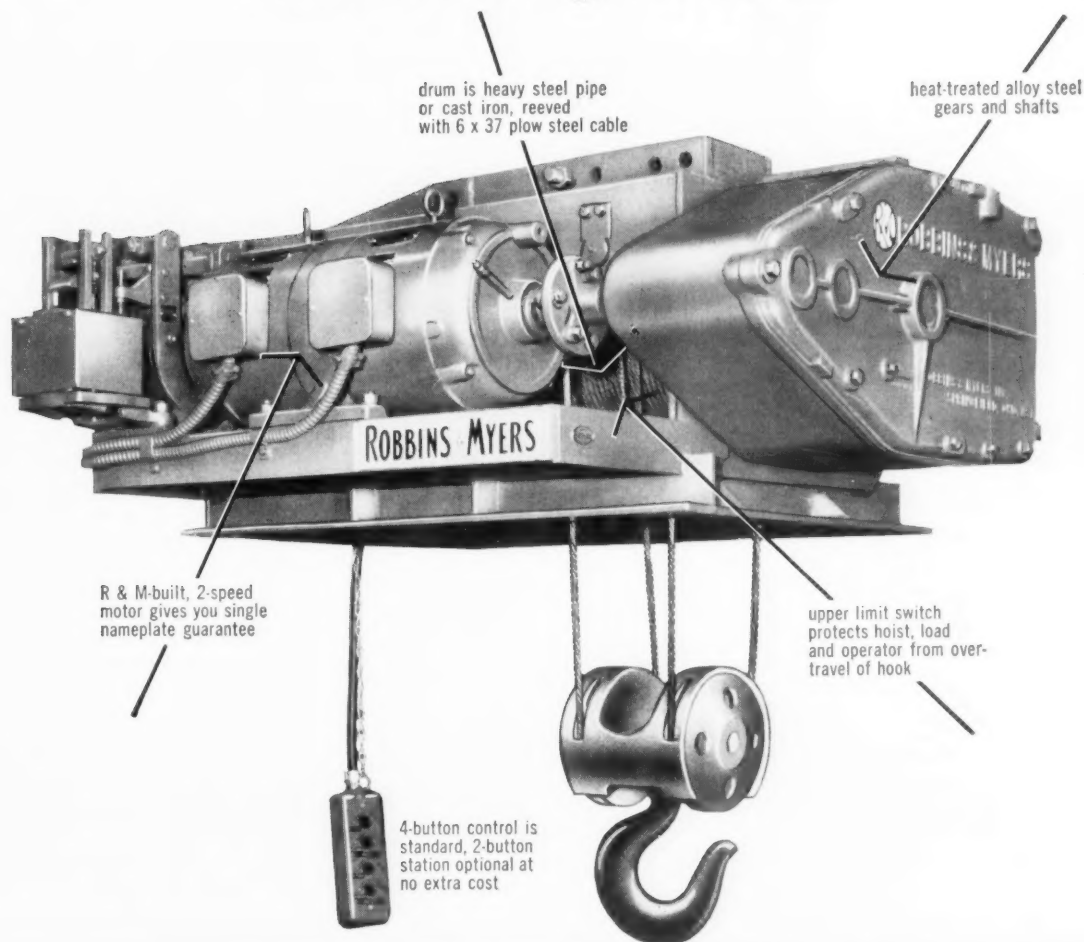



*Rider type Moto-Trucs are also
available in these same basic models.

1955 E. 59th STREET • CLEVELAND 3, OHIO
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MATERIAL HANDLING ENGINEERING

dual-duty hoist



 Dual-Duty two speed hoists keep any load under complete control. They furnish the perfect, steady speed combination you need for gentle, accurate spotting of dies, cores, patterns and other delicate loads; and they give you the fast-action lifting you want for high speed production. Their simple, dependable squirrel cage motor eliminates the uncertain speed-load characteristics and maintenance problems of the slip-ring motors used on most conventional multi-speed hoists. With R & M you can select from industry's widest job-proved line: 5 frame sizes, 25 speed-load combinations.

Capacities: 1/2 to 10 tons. Controls: 2 or 4 pushbutton. Mounting: lug or hook; plain, geared or motorized trolleys. Robbins & Myers, Inc., Hoist & Crane Div., Springfield, O.

take it up with
ROBBINS & MYERS
hoists cranes

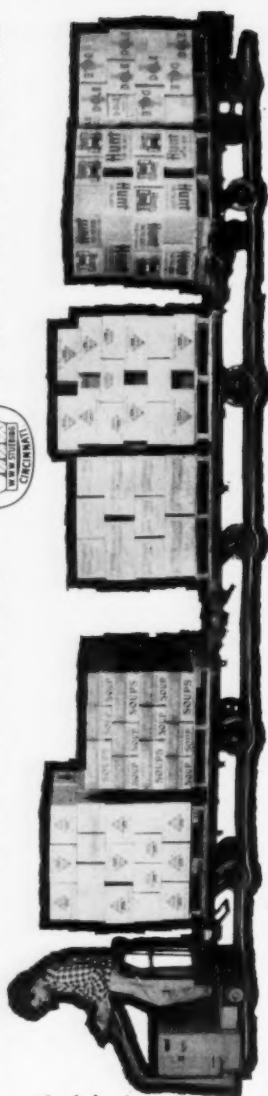


Request Bulletin 880

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HydroLectric A GREAT NAME IN LIFT TRUCKS

A TRUCK FOR EVERY PURPOSE AND MATERIAL



This powerful Hydroelectric Tractor hauls one or multiple units with speed, safety and ease of operation. Features the exclusive DYNA-DUAL POWER UNIT. Power enough to pull loads of 6000 lbs. or more at low cost.

Write for Bulletin KT

LIFT TRUCKS, INC.

2419 Spring Grove Avenue, Cincinnati 14, Ohio

MEN IN THE NEWS

At The Rapids-Standard Co., Inc. . . . Charles S. Weisenhorn

is branch manager of the company's Memphis office. He will serve counties in Tennessee, Arkansas and Mississippi. He is a professional member of SPHE and was vice president of the Chicago chapter. He attended St. Louis University, served in the infantry during World War II and with the transportation corps in the Korean war.



At Clark Equipment Co., Construction Machinery Division . . . Robert J. Warren

has been appointed field engineer. He will render sales assistance in the application of "Michigan" construction machinery. He will handle job estimating and secure, classify and organize technical data through field tests and regular field engineering activities.



At Leschen Wire Rope Div., H. K. Porter Co., Inc. . . . H. Robert Baer has been appointed sales representative in the northeastern Ohio and northwestern Pennsylvania territory. He is a Duke University graduate where he majored in engineering. He will make his headquarters at Canfield, Ohio.

Kenneth P. Hayes, service parts manager of the Transmission and Axle Div., Rockwell-Standard Corp., died November 20 at Mount Carmel Hospital in Detroit after a long illness. He was 58 years old. He started with the company in 1925 and became service parts manager in 1952. He was a past American Legion Commander and was active in the 40 and 8 Club and the Masonic Lodge.

At Richards-Wilcox Mfg. Co.

. . . **Arthur H. Uhler** has been appointed Western Regional Director. He will be responsible for the supervision and direction of sales and service branch offices in California, Nevada, Utah, Colorado, Arizona and New Mexico. He will make his headquarters in Los Angeles. He is an active member of the American Society of Architectural Hardware Consultants.



At Rexford Paper Co. . . .

Jefferson C. Bynum, Jr., is sales representative for the Cleveland - Pittsburgh - Toledo - Akron area.

At Derby Sealers, Inc. . . . Peter J. Parenti

is factory representative in the Midwest area. He will work out of Chicago assisting distributors, dealers and consumers in the more technical aspects of Derby automatic equipment. For the past seven years, Parenti was associated with Shippers Supply Co. in sales and service capacities.

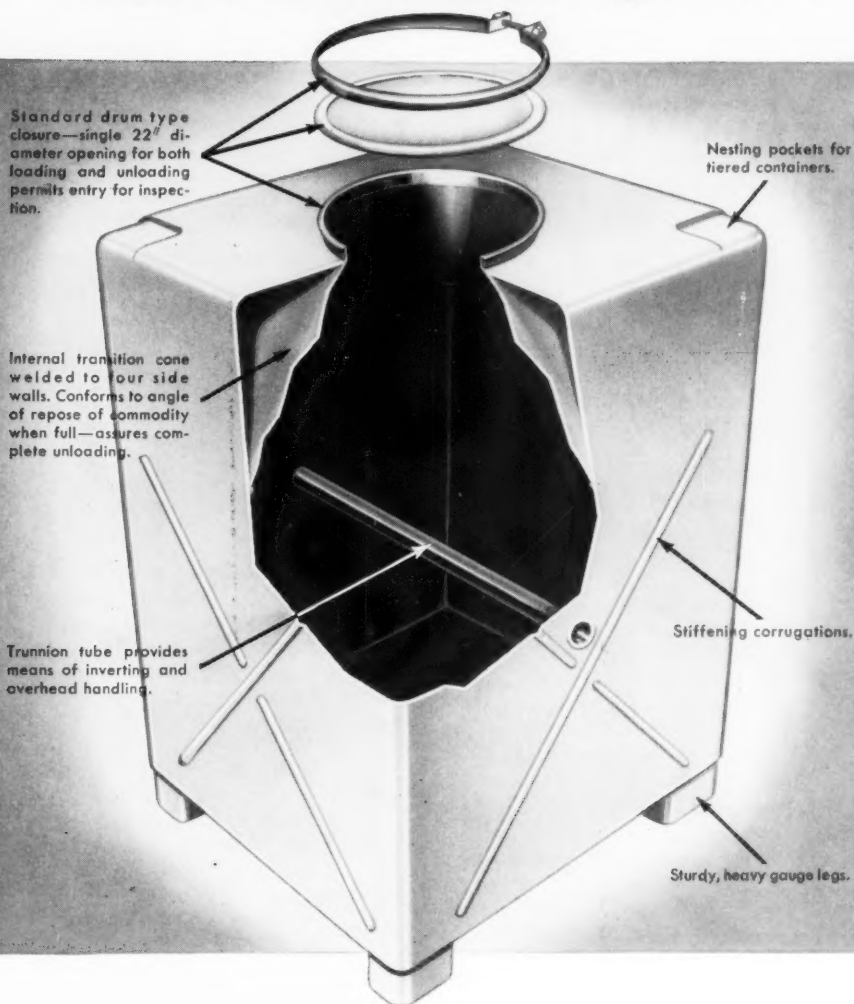


At Harnischfeger Corp. . . .

district manager of the Chicago office is **William Spelius**. He will be responsible for sales of the company's complete line of "Thru-the-Air" material handling equipment including cranes and hoists. Spelius has been associated with the company since 1947, most recently as district manager at Cincinnati.



New Powell **Invert-a-bin** slashes bulk handling costs



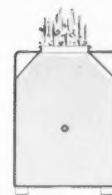
For bulk handling dry granular or powdered materials—sugar—flour—plastics—chemicals—cement—etc.—in plant or between plants, the new patented Powell Invert-A-Bin made of steel or aluminum is the simplest, most versatile container ever developed.

Easily filled, easily inverted, quickly emptied, the Invert-A-Bin can be used anywhere without special devices at each use point. It stores safely outside, lets you take advantage of many transportation economies. Invert-A-Bins eliminate the use of disposable packages and bring you all the advantages of a bulk handling system without the costly investment. Get all the facts—write today for your copy of the Invert-A-Bin, Semi-bulk handling brochure.



THE POWELL PRESSED STEEL COMPANY
HUBBARD, OHIO

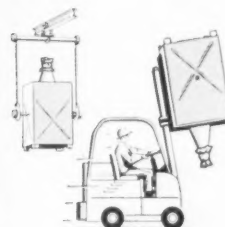
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Fills Fast—22" opening permits fast filling of even powdered materials. Internal cone conforms to angle of repose.



Empties Clean—Internal cone funnels all materials out of bin. No residue remaining.



Used Anywhere—Standard handling equipment—no fancy unloading devices needed at every use area.



Stores Outdoors—Weather-proof, turns yard area into warehouse. Stacks 2 high.



Cuts Shipping Costs—low cost flat-bed equipment considered part of special rail car with "freight free" advantages.



GREEROLATOR

THE
SHOCK-ABSORBER
THAT REALLY CUTS
MAINTENANCE COSTS!



let
this
take
the
pounding
instead
of
your
vehicle

Expensive parts, such as cylinders, hose and packings last longer, perform dependably when rid of harmful shock. With the Greerolator, a "floating action" enables your vehicle to carry bigger and heavier loads faster, smoother and more safely. And the operator rides more comfortably, with better control of direction and load.

In every installation for leading vehicle manufacturers, the Greerolator proved a most effective shock absorber.

CLARK
EQUIPMENT

TOWMOTOR

GERLINGER

AC

YALE

Pettibone Mulliken

TRACTOMOTIVE

Automatic

PETTIBONE MERCURY

Baker

HYSTER

The Greerolator is available as standard or optional equipment, or is quickly and easily installed on your present vehicles at low cost.

GET ALL THE FACTS FROM YOUR DEALER NOW!
or write Greer Hydraulics, Inc., Jamaica 30, New York

DISTRIBUTORS: Desirable Territories are Available

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HANDLING 'ROUND THE COUNTRY

MHE Appoints Consulting Engineering Editor



To implement its policy of providing more engineering emphasis, MATERIAL HANDLING ENGINEERING Magazine has appointed E. Ralph Sims, Jr., Consulting Engineering Editor. Sims is a nationally known material handling management and engineering consultant.

He brings to MHE many years of experience in Industrial Engineering. Before establishing his own firm, he was Director of Industrial Engineering for Alden E. Stilson & Associates. Before that, he was Corporation Material Handling Engineer for Anchor Hocking Glass Corp. where he was responsible for planning and implementation of material handling improvements, plant layout and cost reduction programs.

For three years, Sims was Principal Industrial Engineer at Battelle Memorial Institute. He has also served as Project Industrial Engineer at Jeffrey Mfg. Co., Warehouse Manager for Lit Brothers of Philadelphia, and Consulting Industrial Engineer with Drake, Startzman, Sheahan & Barclay, Inc.

A graduate of New York University, College of Engineering, Sims is a Registered Professional Engineer in Ohio, New York and Pennsylvania.

Turnover Conveyor Hauls Coal

This turnover conveyor belt system hauls 800 tons of coal an hour from Pittsburgh-Midway Mining Company's Paradise Mine preparation plant to barges on the Green River a mile away. It is claimed that this is the first belt system of this kind ever used for

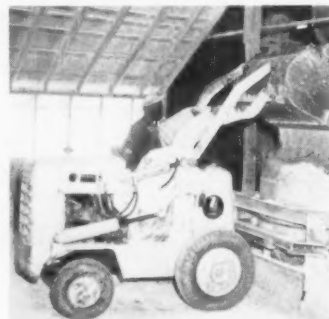
long-distance hauling of coal. The turnover principle, developed by B. F. Goodrich Industrial Products Co., enables the conveyor belt to turn itself over after delivering a load and, again, before accepting a new load. This belt action is



accomplished by placing two twist pulleys at each end of the system. Turned 180 degrees at each end of the system, the belt allows only the clean side to run on top of the return idlers.

Front End Loader Is Workhorse

This Model HA Payloader works 24 hours a day at the International Clay Corp., moving from



110 to 140 tons of clay during that time. The Frank G. Hough loader carries crude clay from storage to a pulverizer for processing kaolin. Although the machine handles an average of 3200 tons a month, it has had only six days of repair time since it was bought in 1954.

whatever your
ideas suggest—
build it with **NEW**



SLOTTED ANGLE

SO STRONG—AIM Brand Slotted Angle is ideal for building heavy-duty equipment, such as this automobile display rack.

SO EASY—AIM Brand Slotted Angle simplifies construction of storage equipment, such as this pallet rack with catwalk.

SO VERSATILE—This unusual street light testing device is another idea application of AIM Brand Slotted Angle.

There's practically no limit to what you can build with new AIM Brand Slotted Angle—the only framing material that gives you Lock-Joints, Friction-Joints and $\frac{3}{8}$ " structural bolts.

The new, scientifically-spaced, slot-and-hole bolting pattern lets you meet all your building equipment needs with less manhours, less material and with greater structural strength. For normal construction and good rigidity, Friction-Joints are formed by bolting through the slots. For maximum strength and rigidity, $\frac{3}{8}$ " structural bolts with full load shoulders fit round holes to form Lock-Joints. Each bolt has a safe load capacity of 2000 pounds, and can be applied with an ordinary or a power wrench.

As your needs change, AIM Brand Slotted Angle can be dismantled to be re-used again and again. This versatile framing material is available in two sizes: Standard 225-80 ($2\frac{1}{4}$ " x $1\frac{1}{2}$ " x .080") and Heavy-duty 300-104 (3" x $1\frac{1}{2}$ " x .104"). Packaged in 10 pieces of 10 or 12-foot lengths with nuts and bolts.

Cold-rolled galvanized steel, AIM Brand Slotted Angle is a product of Acme Steel Company, U. S. pioneers in slotted angle framing material. Available nationally through leading distributors or write: Dept. MJD-29, Fabricated Materials Division, Acme Steel Company, 135th Street and Perry Avenue, Chicago 27, Illinois.



AIM Brand Slotted Angle



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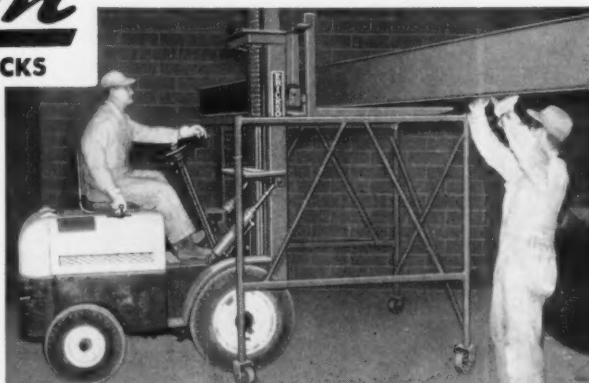
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Pneumatic-tired fork trucks to 8,000 lbs. capacity.
Industrial platform trucks to 30,000 lbs. capacity.

Through 30 years of the toughest day-in day-out work (the concrete block industry), Erickson has truly proven itself to be "The Workhorse of Lift Trucks." Ruggedly built for long life and low operating cost. Perfect balance and big pneumatic tires give the Erickson wonderful traction. 4 speeds both forward and reverse.

The Erickson is "tailor-made" for your needs. Beds on platform trucks custom made. Many attachments available.



| | | | | |
|-------------------------------------|--------------------------------------|--|---|--|
| | | | | |
| W SERIES 2,000-4,000 lbs. | FK SERIES 4,000-8,000 lbs. | PL SERIES Karl-All Scissors Lift 4,000-10,000 lbs. | PF SERIES Hi-Lift Platform 5,000-20,000 lbs. | PA SERIES Articulated Platform 5,000-30,000 lbs. |

Write for Erickson literature and name of nearest sales, parts and service dealer.

Manufactured by **ERICKSON POWER LIFT TRUCKS, INC.**
215 ST. ANTHONY BLVD. N. E. • MINNEAPOLIS 18, MINNESOTA



W SERIES — Compact, powerful, reliable! Four big pneumatic tires for fast, sure travel indoors and out. Rated capacities 2,000—3,000—4,000 lbs.—standard 108" lift—10" center underclearance.

Erickson **KART-ALLS** will pull train of trailers plus a load of freight. With artic-u-lated pivot it's a delight to steer and handle for airports, terminals, warehouses, etc. Custom built to your requirements.

| | |
|--|--|
| SPEEDS PRODUCTION Unitrough Belt Conveyors are low-cost, versatile units, perfect for light duty handling. | LOAD IT UP Series "G" Belt Conveyors are heavy duty units. Years of service under maximum loading. |
| JUST PLUG IT IN Unibilt Portable Loaders are ideal for loading, piling boxes, packages and sacks. | BEST FOR BOTTLES Table Top Chain Conveyors carry bottles, jars, cans, small parts or small packages. |

UNIBILT® CONVEYOR SYSTEMS
You can assemble yourself

CONVEYOR SPECIALTY CO., INC.
35 Years' Experience Means Dependable Quality and Engineering
Send for **NEW Full Line Brochure**
41 NEWPORT AVENUE, NORTH QUINCY 71, MASSACHUSETTS

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OHIO GALVANIZING & MFG. CO.

Industrial TRUCKS and TRAILERS

"Ohio" Trucks and Trailers—in various sizes and capacities—meet many material handling requirements, in different industries. Both standard and specially-designed units offer you sturdy construction, and long, continuous service at minimum cost.

Contact "Ohio" today for free literature and complete details.

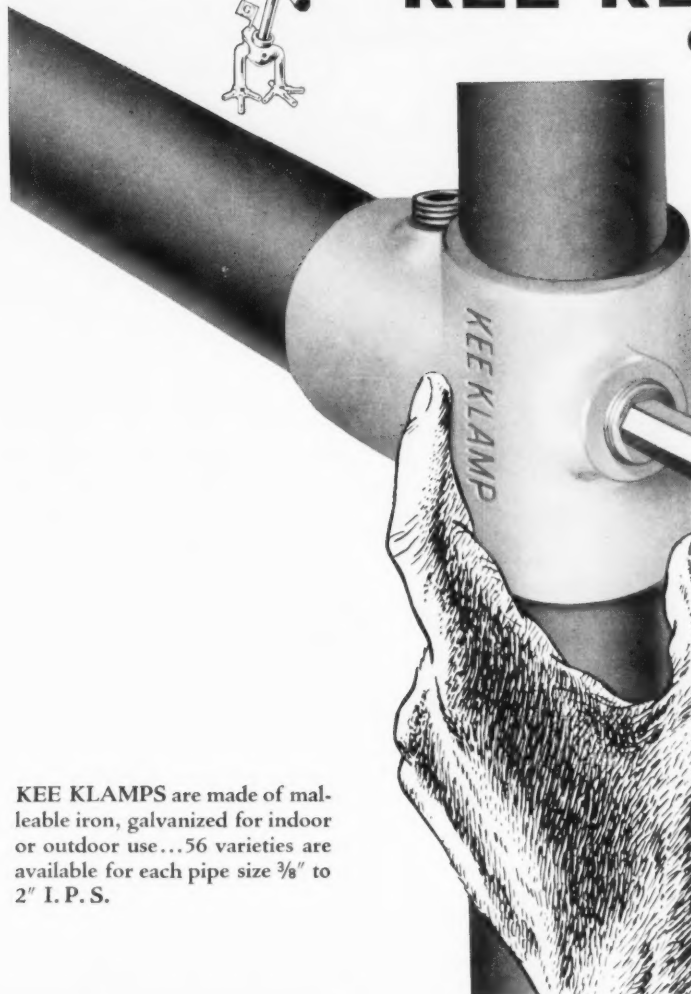
4 Wheel Steer
15 ton capacity.
60" wide x 192" x 33" high.

THE OHIO GALVANIZING & MFG. CO.
NILES • Established 1902 • OHIO

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MATERIAL HANDLING ENGINEERING

BUILD IT QUICKLY WITH

KEE KLAMPS AND ORDINARY PIPE



With KEE KLAMPS and standard pipe, you can build storage racks, special frames, and many other structures in less time and at lower cost for permanent or temporary use.

KEE KLAMPS can be used over and over.

KEE KLAMPS are made of malleable iron, galvanized for indoor or outdoor use...56 varieties are available for each pipe size $\frac{3}{8}$ " to 2" I. P. S.

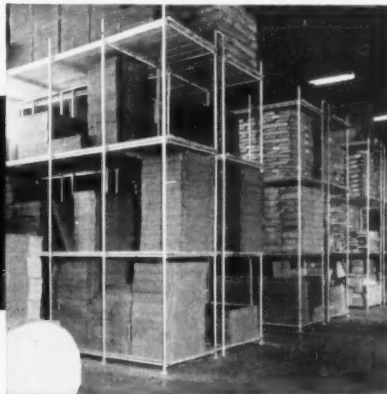
No threading of pipe necessary. Each set screw in the KEE KLAMP will support a load of 4000 lbs. An ordinary Hexagon wrench is the only tool needed for erecting a KEE KLAMP structure.

The world famous KEE KLAMPS are now available from stock in the United States. If your problem includes storage racks, frames for signs or displays, railings, etc., write us...our engineers will give you detailed suggestions. Ask for Bulletin No. K25B.

Storage for heavy material.



Unlimited arrangements for accessibility and efficient use of space.



For storage of bulky and irregular stock.



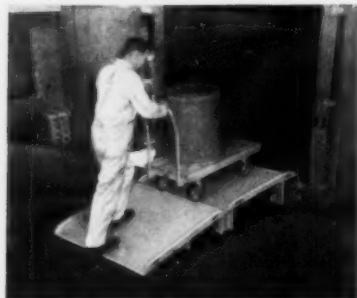
Several choice areas open to Representatives with stocking facilities—Write for information.

KEE KLAMPS NORTH AMERICA LIMITED
1079 WILLIAM STREET BUFFALO 6, NEW YORK

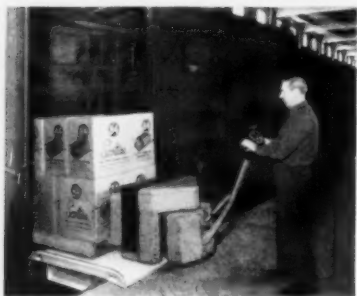
Canadian Address—10 Leswyn Road—Toronto 19, Ontario

Circle 132 on Reader Service Card for more information

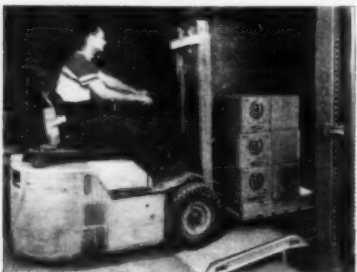
Magcoa Lite-Weight Dockboards



The perfect solution when trucks are much higher than your dock is a Ramp-Dockboard combination. For full flexibility, the Dockboard section can be used separately on lower trucks. One combination solves several dock problems.



To solve the problem of varying widths and heights of railcars, Magcoa Rail Dockboards are individually fabricated for your specific dock conditions . . . are guaranteed to fit your needs exactly! Truck loading or rail . . . there's a Magcoa method to cut your costs.



speed dock work!

FOR DETAILS merely clip this coupon to your letterhead. (Please include your name and title.)

**MAGNESIUM COMPANY
OF AMERICA** Materials Handling Div.



East Chicago 1, Indiana

In Canada: Magcoa Limited, Toronto, Ontario.

Circle 90 on Reader Service Card

\$ Lift Truck Speeds Billet Handling

Aluminum billets, specially bundled to fit forks of a Towmotor Model 540 lift truck are **quickly transported** from inside Alcoa's



Detroit ingot plant to outside storage area. The lift truck has 7000-pound capacity and the recently developed Torno Torque drive which gives **smoother starts and less driver fatigue**. Aluminum pigs, weighing over 700 pounds, are also carried, two at a time, from storage area to the alloying furnace inside the plant.

Circle 301 on Reader Service Card

\$ Shelf Utilization Saves Floor Space

Ability to adjust shelf height rapidly to the changing storage requirements of more than 30,000 items from 2000 suppliers means more effective shelf utilization to the Los Angeles Drug Co. Modern storage facilities are designed around Erectomatic shelving,



made by Standard Pressed Steel Co. The Drug Co. uses **one-third less shelving, floor space and work force** because of the compact efficient arrangements.

COST CUTTING IDEAS

Day-to-day changes are made to minimize lost "headroom" between shelves resulting in additional cost savings. An initial \$28,000 was saved in designing around the fast-adjust bracket-type shelving.

Circle 302 on Reader Service Card

\$ Faster Set-Up In Shipper Box

A new octagonal corrugated container for shipping Marvel saw blades resulted in several cost sav-

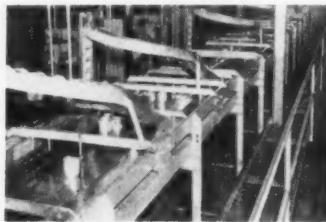


ings to Armstrong-Blum. The box is set-up simply by placing one stitch in each side. **Lower cost resulted because the box requires less material.** Several sizes of blades can be shipped in the one size box, made by Gaylord Container Div. of Crown Zellerbach Corp.

Circle 303 on Reader Service Card

\$ Steel Belt Conveyor Speeds Automation

A 360-foot conveyor at the Plymouth engine plant in Detroit moves 1,200 pistons an hour through an automated production line comprising 44 machine tools. **Downtime has been reduced** because the steel belt supplied by Sandvik Steel, Inc. slides smoothly under accumulated metal parts without damage to itself or the



parts. Previous belts wore rapidly and pistons damaged the belts and held up production.

Circle 304 on Reader Service Card
MATERIAL HANDLING ENGINEERING



Greater Capacity... Greater Versatility

Grove Hydraulic Cranes are designed, built and tested to deliver maximum capacity and performance at a lower operating, maintenance and initial cost. They are safety engineered to carry a basic capacity load with the boom fully lowered. Precision hydraulic controls permit the safe handling of the most delicate machinery as well as heavy rugged loads. In industrial plants, railroad shops, pipe yards, oil refineries, lumber yards, chemical plants, Grove Hydraulic Cranes are saving dollars every day. These industry-wide proven cranes can effect the same important savings in your operation.

► GROVE HYDRAULIC CRANES HELP YOU PRODUCE MORE!

Grove Cranes will lift more payload . . . move it faster . . . place it in tighter spots . . . with greater safety . . . than any other crane. Precision control of the load at all times is provided by sensitive, safety-engineered hydraulic boom controls that work so smoothly they literally seem to flow. These advantages coupled with the mobile agility and short turning radius of Grove Cranes will produce more work per man hour with less labor and fatigue.

► GROVE HYDRAULIC CRANES COST LESS TO BUY!

Grove Cranes are priced lower than any other crane of the same capacity. This saving is due to the simplicity of the Grove design which eliminates needless parts and attachments . . . Grove's use of standard components . . . and the outstanding Grove integral frame and counterweight. These Grove features provide a rugged chassis topped with an amazingly versatile boom at the lowest possible cost.

THE PROOF IS IN PERFORMANCE. . . .

LOOK AT ALL FOUR !

. . . but before you buy, write for a GROVE competitive demonstration.

GROVE MFG. CO.

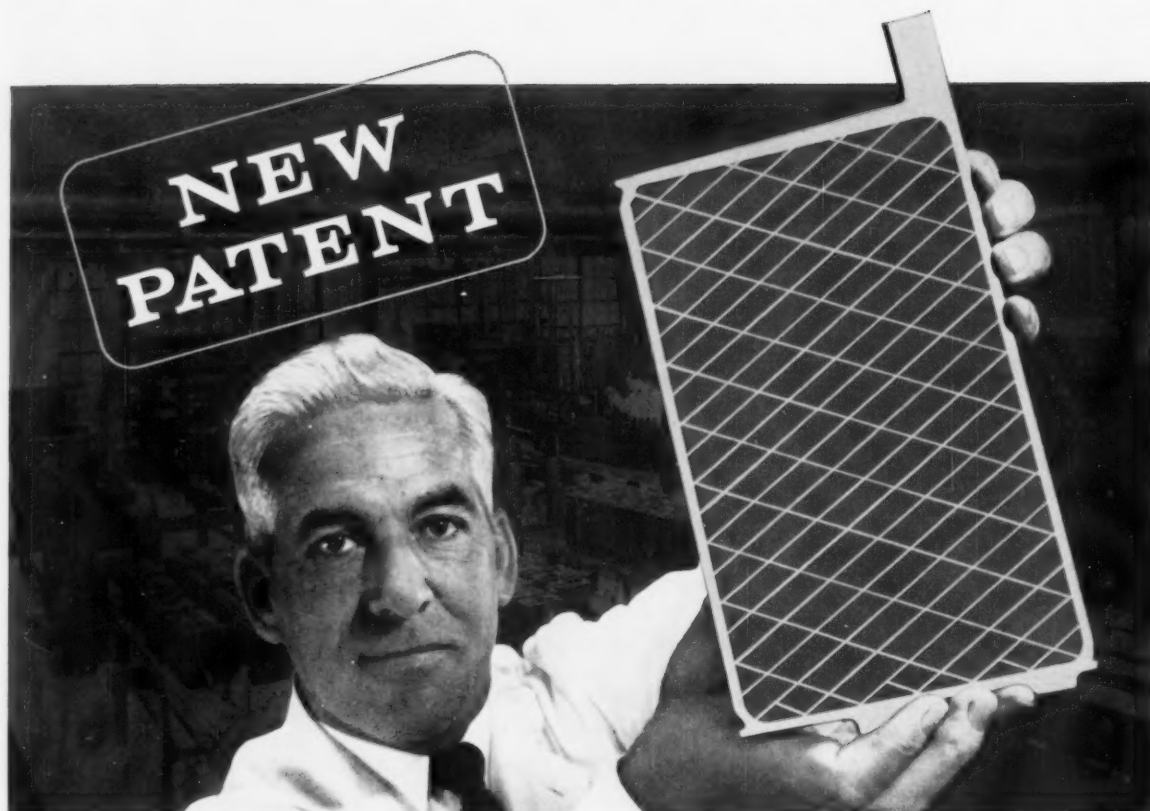
SHADY GROVE • PENNSYLVANIA

BUILDERS OF HYDRAULIC CRANES • INDUSTRIAL WAGONS & TRAILERS

FEBRUARY, 1959

Circle 62 on Reader Service Card for more information





The New **gould** *SILCONIC* Plate Lengthens Battery Life 10-25%

Two distinct improvements:

1. Gould has developed a new patented (July 1958) process for introducing Silver-Cobalt into the active materials of the positive plates of Motive Power Batteries.

The temporarily soluble silver-cobalt sulphates, when added to the active materials, migrate to all positive grid members.

The Sulphates collect on the grid members to form an insoluble oxide surface or protective sheath which is impervious to acid and oxygen attack.

2. In order to insure a homogeneous grid completely free of flaws, a carefully determined amount of arsenic is added to the regular metal. This produces a smooth flowing metal during the casting operation which results in an extremely dense and uniform grid.

By selectively adding the silver-cobalt and arsenic to the plate, Gould is able to produce the new *SILCONIC* positive plate . . . a Gould exclusive.

HOLDS CHARGE LONGER. In those applications where batteries are idle for periods of time the *SILCONIC* Plate is ideal. This Silver-Cobalt coating prevents migration of materials to the negative plate, effectively reducing self discharge within the cell.

MIGRATION OF SILVER-COBALT ATOMS. The migration of Silver-Cobalt atoms continues throughout battery life, offering continuous resistance to the corrosive attack of acid and oxygen. This continuous effect is the result of a solid state migration of the Silver-Cobalt which penetrates deeper and deeper into the grid metal during battery operation, thus prolonging the life of the *SILCONIC* Plate.

LONG-FULL SHIFT OPERATION ASSURED. Comparative tests between *SILCONIC* and conventional plates prove that the *SILCONIC* Plate maintains maximum capacity for a considerably greater portion of its service life, retards the tendency toward grid growth, assures longer full shift operation of batteries.

Write for complete data or call your local Gould representative. He's listed under "Batteries Industrial" in the yellow pages. Gould-National Batteries, Inc., Trenton 7, N. J.

Gould Industrial Truck Batteries with *Silconic* Plates resist corrosion, hold their charge and last longer.



More Power to you from Gould

Circle 61 on Reader Service Card for more information

MATERIAL HANDLING ENGINEERING

"... We Cannot Afford One Cent Of Waste ..."

A highlight of President Eisenhower's State of the Union address was the emphasis on cutting costs. It was aimed at Government operations, of course, but the President did consider broader aspects of the national economy.

He was deeply concerned over inflation. (This, most business experts agree, is the real danger ahead.) His feeling was clear when he said, "... we cannot afford one cent of waste ...". And as he spoke, I thought, "Here is the world's leading man expressing the creed of our industry."

There are many forces building inflation pressure. Some we can't directly control. In the area of industrial productivity, though, we can do plenty. Our destiny has been and is to eliminate waste wherever we can find it.

Inflation did not abate last year. In that odd recession, the cost of living rose. The stock market was strong. While there was some unemployment, strikes for higher wages continued. Consumer prices held up. They didn't drop because there was demand for everything except a few pure luxuries.

Now there is demand even for these. Folks who delayed buying last year seem ready again—with cash or credit—to get the things they want. Inflation pressure is on again.

One essential way to keep prices in line will be to produce enough to satisfy all needs. Another, obviously, will be to produce at minimum expense, eliminating all wasteful costs. We have already found many ways to get higher production. Waste, though, has not been easy to find and eliminate. Waste is an insidious thing. It's everywhere. It creeps into the best systems. And, of course, it is hardest to find and cut out when it has become part of an established routine.

There's only one way to beat waste. You have to suspect it is in every department, every operation. From the receiving dock through the shipping department, every move has to be challenged to prove it's essential.

This is a special year for Material Handling. It is the tenth anniversary of the American Material Handling Society. The big celebration will be a huge banquet during the MHI exposition in Cleveland, in June. (A speaker of international reputation is probable.) Six months before the event, AMHS chapters are reserving tables at an unprecedented rate. The exposition, itself, has been practically sold out for months. The AMHS and Society of Packaging and Handling Engineers are working hard to find the way to a combination acceptable to all members of both groups. We can't recall when there have been more things doing and higher interest in industry events.

There is bound to be greater publicity on the activities and contributions of Material Handling than ever before. The public will be aware of them. One of our big jobs will be to see that our efforts are accurately represented in the press and over the air.

We suggest that it would be proper and significant for us to tie in with the President's efforts. His words could be our slogan at least through 1959. For, surely, "we cannot afford one cent of waste."

Ed Leighton Executive Editor



LIFT TRUCK DRIVER tries out the training course set up to simulate actual working conditions. Other trainees

stand by to score him on proper performance. Each man learns much from his fellow trainees' experiences.

Cover Article



How to Sell a Driver

by William E. Dobbs, training officer

The Consolidated Mining and Smelting Company of Canada Limited

AT CONSOLIDATED MINING and Smelting Company of Canada Limited (Cominco) we used fork lift trucks for 17 years. Our drivers' only teacher was experience, and she was a poor one. We had high maintenance costs on the trucks and plenty of unsafe driving practices.

At Cominco we use 28 fork lift trucks to handle pig lead, slab zinc, and bagged fertilizers. Including relief drivers and 3-shift operation for most trucks, we had about 100 drivers who needed training. So we decided to go about it in an organized way, with a complete driver training program.

We decided that the key to getting cooperation from the workers being trained would be: Stress *why* and *how*, not *do* and *don't*. The results proved that it made an effective program.

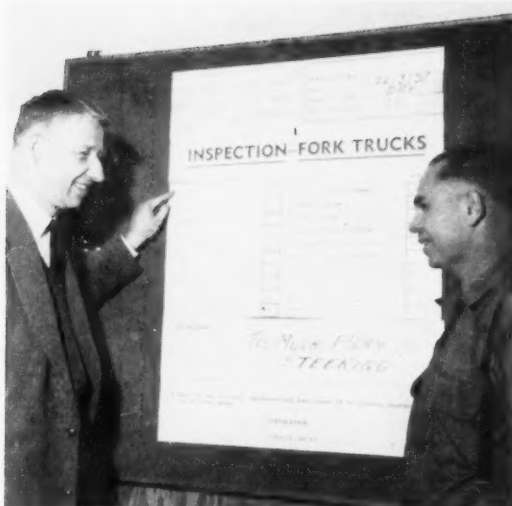
Right in the beginning we told the men *why* we were starting this course. After all, some of them had been driving for us a long time. We explained that our training program was to improve the skill and safety of each man. We assured them it wasn't a scheme to just weed out poor drivers.

To give us a base, we gave all the men a driving test on a course that simulated normal working conditions. The tests showed that most of the men had the same poor driving habits. This fact helped us direct our training sessions towards group improvement rather than pointing to individual shortcomings.

An important part of the course was teaching the mechanics of how a lift truck works. Here we stressed preventive maintenance. We emphasized how important it is for the driver to make a daily

check of the truck, using our inspection report form. By checking every item on the report, the driver can spot minor defects, have them repaired before they become serious. We explained the workings of major component systems such as the engine, power train, cooling, oil, hydraulic, electrical, brake, etc. And we showed how the wrong operation could damage these systems.

We were hampered by having only one truck for the class. Anyone who has tried a driver training program probably went through the same thing. In order to keep the interest of the men waiting their turn, we had them check the driver's performance against a list of correct driving practices. The men were keenly critical, but in a constructive way; they enjoyed the competitive spirit that developed.



INSPECTION REPORT FORM, blown up, gives the driver a check list to handle preventive maintenance.

Training Program

Every morning we had a quiz on yesterday's lesson. We found that the men don't like true-or-false questions as well as the essay questions, that is, questions demanding a full written answer. They want to qualify their answers, to show what they've learned. For us, the quiz showed not what the men knew but what they still had to learn.

During these quiz sessions we learned something else—you have to determine how well the men can read and write beforehand. It's important to help the men without much schooling to complete the questions.

The final examination had two parts: a written part and a driving test on the truck course. Questions for the written part were taken from the daily exams. The driving course layout was the same as used for the daily practice sessions. We gave additional credit for attitude, participation and general improvement.

In our training course we used visual aids, models, posters, and films. The company supplied the men with protective clothing, coffee, and lunch. We knew that the men were interested in driver training when we found them talking about driving during the coffee-breaks and lunch.

(Continued on page 103)

Training Program Schedule

First day, morning (classroom):

1. Welcome to training program
2. Personal introductions
3. Explanation of program
4. Outline of company and driver responsibilities
5. Film on driver safety
6. Explanation of driving course (on scale model)

First day, afternoon (on course):

1. Driving test (for experienced men)
2. Basic driving instruction (for new men)

Second day, morning (classroom):

1. Study of truck components
2. Explanation of causes of breakdowns
3. How to use the daily inspection report
4. Summary of how truck, driver, and mechanic are dependent on each other

Second day, afternoon (on course):

1. Practice daily check of truck
2. Review faults of first driving test
3. Practice driving, using proper methods

Third day, morning (classroom):

1. Quiz and review of first 4 sessions
2. How to handle gasoline (taught in fire department)
3. How to use fire extinguishers (taught in fire department)
4. Theory of basic truck operations: starting, shifting, traveling forward and reverse, operating forks, maneuvering with loads, parking, safety, etc.

Third day, afternoon (on course):

1. Practical application of first 5 sessions

Fourth day, morning (classroom):

1. Quiz and review of fifth and sixth sessions
2. Theory of basic operations (continued)
3. Practical training (on course)

Fourth day, afternoon (on course):

1. Practical training (continued)

Fifth day, morning (in classroom and on course):

1. Written examination
2. Practical driving examination

Fifth day, afternoon (classroom):

1. Film on driver courtesy
2. General discussion of program and fork truck operation



- A. Handles for safe lifting, sliding and george truck



- B. Light Weight
Multiplying Factor:
Steel .1
Aluminum .5
Fibre 1.0
Plastic 1.0



- C. Easy to clean



- D. Can be stacked



- E. No finish to maintain



- F. Full length stack ledge to permit sliding of top pan



- G. Resists impact
Multiplying factor:
Steel 1.0
Aluminum .4
Plastic .3



- H. Provisions for marking



- I. Resists abrasion
Multiplying factors:
Steel and lam. phenol 1.0
Aluminum .8
Fibre and other plastics .3



- J. Inertness to cleaning solutions
Multiplying factors:
Steel 1.0
Aluminum .8
Plastic .6
Fibre .2

How To Evaluate

I. Tote Pan Evaluation Guide

by N. G. Schaffer
Western Electric Co.

SOMETIMES buyers don't give much thought to the design of equipment which has a comparatively low unit price, even though the total cost might be fairly high. This is often the case when tote pans are bought.

At the Allentown Works of the Western Electric Company they didn't want to fall into this snare. They needed a new tote pan design to meet the requirements for manufacturing electronic products. There was a lot of delicate assembly work being done by women, so handling ease and light weight would have to be factors to consider. And they knew that the tote pan had to have functional characteristics that would make it suitable for work in various departments: product engineering, manufacturing, inspection, ship-

ping and receiving, stores and maintenance. They considered all the work situations which might arise from the tote pan's use on both an interplant and an interworks basis.

Next the Allentown Works prepared a tote pan study to be presented to the company's interworks engineering conference.

The study is shown on these pages. The tote pan characteristics are pictured and described in the columns at far left and far right. They are keyed to the chart below; each characteristic is rated at a value from 1 to 11 by each of 5 departments: product engineering, operating, inspection, stores, and maintenance. The characteristics are shown on the chart in the order of their total worth to all departments.

Ratings of the Tote Pan Characteristics

| DEPARTMENTS | A | B | C | D | E | F | G | H |
|---------------------|----|----|----|----|----|----|----|----|
| Product Engineering | 19 | 21 | 16 | 20 | 9 | 13 | 3 | 18 |
| Operating | 21 | 14 | 20 | 16 | 17 | 8 | 18 | 6 |
| Inspection | 20 | 21 | 17 | 19 | 15 | 18 | 8 | 10 |
| Stores | 20 | 21 | 17 | 19 | 13 | 10 | 12 | 18 |
| Maintenance | 18 | 17 | 19 | 12 | 21 | 14 | 20 | 6 |
| | 98 | 94 | 89 | 86 | 75 | 63 | 61 | 58 |

In-Plant Containers

2. Container Preference Study

RECENTLY MHE sent a survey to 300 readers, asking about their preferences in in-plant containers. The following information was gathered from 141 replies.

1. *What types of in-plant containers are used in your plants?*

Solid metal containers had the highest percentage of users: 24.1. Wood followed close behind with 21.5. Kraft or fiberboard had 17.4; wire, 12.9; plastic, 8.5; expanded metal, 5.7; vulcanized fibre, 5.4; other, 4.4.

2. *Do you re-use suppliers' shipping boxes as in-plant containers?*

Yes, said 58.7 percent of the respondents; no, said 41.3 percent.

3. *How are in-plant containers transported about your plants?*

Most popular method of transportation was powered vehicles

(fork trucks, tractor-trailer trains, etc.), according to 55.8 percent. Manual handling (one by one) accounted for 22.2 percent; conveyors were the choice of 13 percent. Hand-propelled equipment (hand trucks, dollies, castored racks, etc.), stated 9 percent.

4. *How many of your in-plant containers are specials (custom built to your specifications)?*

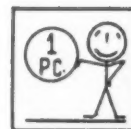
How many are stock items (standard sizes, materials, etc.)?

51 percent of the containers are standard, 49 percent are specials.

5. *Check the 3 in-plant container features most important to you.*

Durability received 29.6 percent of the checks; cost, 26.4; stackability, 20.6; nestability, 9.0; corrosion and moisture resistance, 6.8; weight-to-cost ratio, 4.6; fire resistance, 1.9; quietness, 1.1.

L. One-piece construction (no crevices)



M. Tends to keep out dust when stacked



N. Can be nested or stored flat



O. Availability without rack



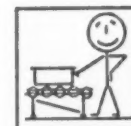
P. Can be easily covered



Q. Heat resistant
Multiplying factor:
Steel 1.0
Aluminum .5
Plastic .1



R. Adaptable to roller or skate wheel conveyors



S. Adaptable to mass handling



T. Adaptable to common carrier shipping



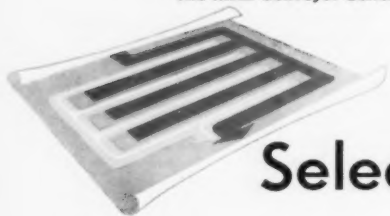
U. Water tightness



by 5 Departments

(Columns at left and right provide key to chart)

| J | K | L | M | N | O | P | Q | R | S | T | U |
|----|----|----|----|----|----|----|----|----|----|----|----|
| 14 | 15 | 17 | 11 | 10 | 8 | 12 | 6 | 7 | 4 | 5 | 1 |
| 12 | 19 | 15 | 7 | 9 | 5 | 4 | 11 | 13 | 2 | 1 | 10 |
| 9 | 16 | 2 | 12 | 1 | 13 | 11 | 14 | 7 | 5 | 4 | 3 |
| 6 | 2 | 5 | 16 | 15 | 14 | 9 | 1 | 7 | 11 | 8 | 4 |
| 15 | 4 | 16 | 3 | 13 | 7 | 8 | 11 | 2 | 10 | 9 | 5 |
| 56 | 56 | 55 | 49 | 48 | 47 | 44 | 43 | 36 | 32 | 27 | 23 |



Selection and Use of Overhead

Components of overhead conveyors and their effect on selection are covered in this article, the second in a series designed to give material handling engineers important information on all types of conveyors. The article will be concluded next month with information on selection of trolley conveyors and discussions of cable, power and free, and other overhead conveyors.

AN overhead conveyor is one of the most versatile of all material handling tools. It consists of an overhead track along which carriers, suspended from trolleys, are moved by continuous chain or cable, or an enclosed track through which a continuous chain moves. In many types the track can be curved at an angle in either horizontal or vertical planes. This flexibility makes overhead trolley conveyors especially adaptable to old buildings—they can turn in any direction, go up or down from one level to another, some even move vertically. The overhead conveyor can go many places where workers cannot—through high temperature ovens, chemical baths, acid sprays, and cleaning, painting, and drying machines. Overhead conveyors require floor space only for loading and unloading. By using ceiling space otherwise wasted expensive

floor space is saved for other uses. Aisleways and work areas are kept free and congestion eliminated. Length of the overhead conveyor is virtually unlimited. For plants which have frequent layout or process changes, there are overhead conveyors which are easily taken down and re-erected in new paths.

You can design hooks and trays to carry almost any kind of load, from toothpaste tubes to truck chassis. An overhead system can deliver subassemblies or parts to various stages of the assembly line at an exact predetermined rate in the order they are needed. Products can be assembled while work is in transit, eliminating unnecessary lifting, reducing worker fatigue, and minimizing loss and breakage. The overhead conveyor reduces inventories because it makes it easy to gauge the exact amount needed. And it is easy to

load with varied parts in the quantity and order in which they will be used.

You can use the same overhead conveyor for transportation, storage in process, then bring it down to working level for assembly operations. And the initial cost and upkeep of an overhead conveyor system is low.

Overhead Conveyor Types

Overhead conveyors move on I-beams, rails, inverted T rails, or inside tubular rails. Trolleys are connected by chain, cable, or steel rods. Power can be supplied from one source or several. Overhead systems can be run in one plane or operate at high and low levels. Overhead lines can be short, connecting one machine to the next, or they can be thousands of feet long, integrating manufacturing operations in widely separated plants.

Do You Need A Overhead Conveyor?

Answering these questions will help you to decide . . .

1. Do you want to connect operations—either close to each other or widely separated, even scattered through several buildings—into one continuous system?
2. Do you need more storage space? You can find it in your waste ceiling space with an overhead conveyor.
3. Do you want to move parts

through acid, heat, chemical baths or other processes harmful to workers?

4. Can you suspend the material you are moving? If bulk, can it be moved economically in containers of a size that can be carried?
5. Is your material being harmed by multiple handling, rough treatment, or road jars and bumps?

6. Is the size and weight of your work too big for the use of other types of conveyors?

7. Would your departments benefit from a steady flow of material along a fixed path?

8. Can you use overhead conveyors to replace storage at point of use, thereby saving floor space? (An overhead conveyor can circle around a work area keeping parts constantly available.)

9. Do you want to cool or dry

Conveyors

PART I

There are trolley chain conveyors for moving both light and heavy loads. Capacity depends on the size of I beam the trolley moves on. The 3 inch trolley conveyor is designed for relatively light loads. Maximum load where there are no vertical curves is 200 or 250 pounds. These trolleys are used to handle small components, sub-assemblies, and light products such as small electrical appliances and small fabricated products.

Trolley Conveyors

The 4 inch trolley conveyor is for loads up to 400 or 500 pounds. It's the most popular size and can be used for most applications in automotive, major appliance, aircraft, implement, rubber, ceramic, and other metal fabricating and manufacturing operations.

The 6 inch trolley conveyor moves up to 1,000 or 1,200

parts while they are being moved?
10. Do you want to assemble or do other operations while material is being moved?

11. Do you want to paint or clean material without removing it from the conveyor?

12. Do you want to store material while it is in process?

13. Do you want to insure that parts arrive at the exact time they are needed, or pass through an operation for a set time?

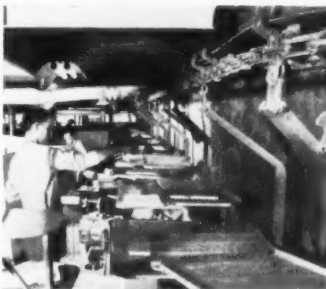
Overhead Conveyors at Work



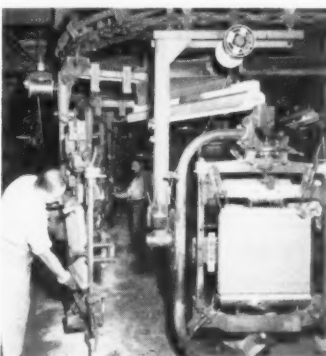
MOLDS are assembled at bench height, lowered to pouring level.



PIG MOLD conveyor carries molds past automatic pouring station.



GLUE is sprayed on furniture parts as they move to drying oven.



SPECIAL FIXTURES hold radiators for 11 soldering operations.



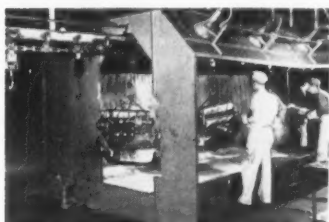
TRAYS OF PARTS dip at work stations for assembly operations.



QUICK DESCENT brings freezer units into tank for inspection.



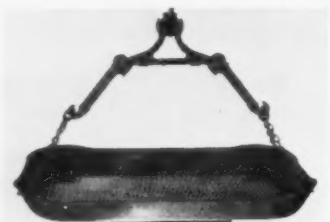
DIP PAINTING is economical of space, trough catches drippings.



SPRAY PAINTING is easy when parts move on trolley conveyor.



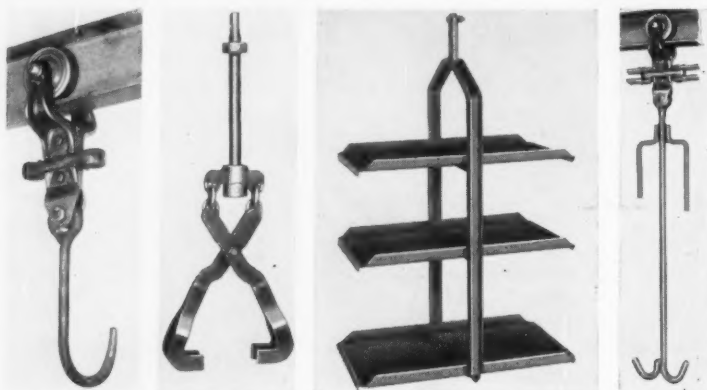
BIN carries tote boxes of small parts to the assembly line. Use trolleys to avoid traffic jams.



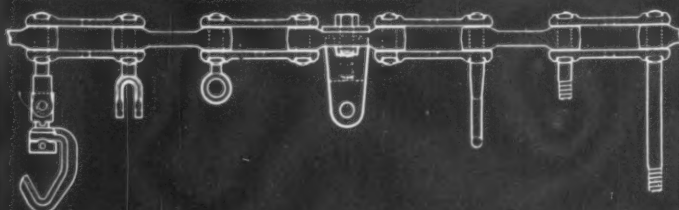
HEAVY PANS carry parts that need to be cooled on route.

Load Carrying Devices

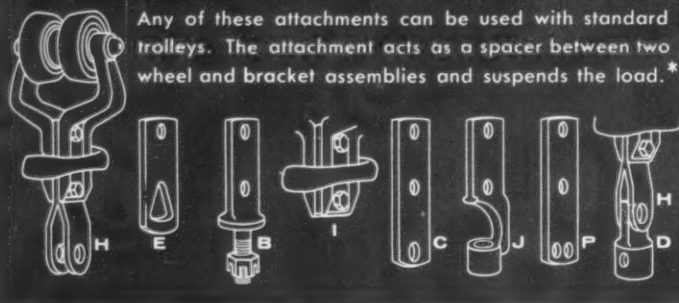
... include these boxes, cooling pans, hooks, trays, tongs, wire baskets, automatic discharge buckets, and hundreds more. And manufacturers will make new designs to suit your needs. The type of carrier best suited for your application depends on what you are moving and the operations that are done en route.



HOOKS, TRAYS, AND TONGS can be designed to suit almost any job. The proper carrier makes loading and unloading convenient, prevents damage to adjacent parts, and enables each trolley to carry a bigger load.



Many types of chain pins and intermediate chain attachments are used to suspend light loads between the trolleys.



Any of these attachments can be used with standard trolleys. The attachment acts as a spacer between two wheel and bracket assemblies and suspends the load.*

* Uses of the various lettered attachments are described on page 105.

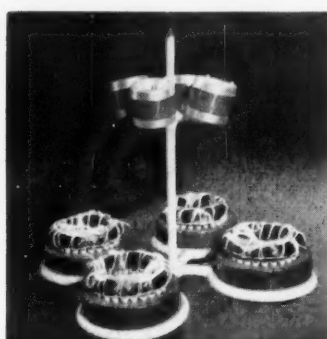
Trolley Conveyors

pounds. They are used in foundries for cooling castings, in the steel industry for handling forgings or coils of rod and strip, in the construction machinery and automotive industries, and in other heavy manufacturing and processing operations.

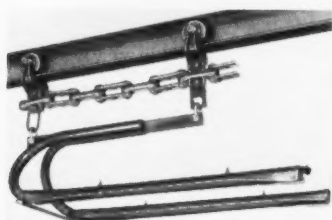
To determine the right trolley conveyor examine each component in light of your needs. The weight you can place on each trolley is usually limited by the beam. However, you can carry heavier loads than allowed for a single trolley by using a load bar which divides the weight between two trolleys. This is particularly useful when only a few of the items being moved exceed the weight limit and



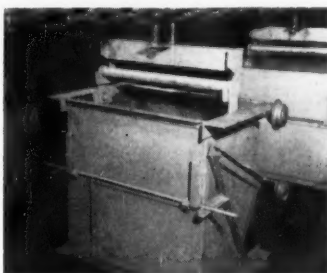
WIRE BASKET can be used to carry many small parts through operations such as washing and dipping.



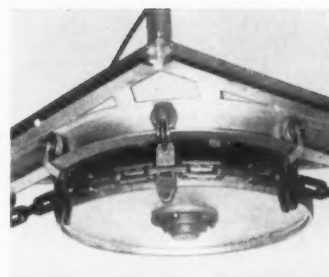
PLASTIC COATED carrier moves small motor rotors and stators to assembly without scratching them.



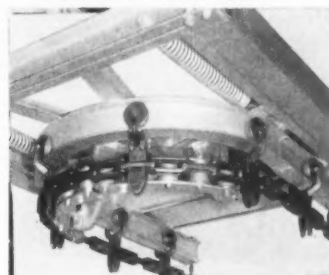
SPECIAL CARRIERS divide weight of load over two trolleys.



DUMP BOTTOM carrier automatically discharges bulk where needed.



EITHER ROLLERS OR WHEELS can be used on turns and takeups. The wheel turn, left, is especially suited for inaccessible locations because only one bearing need be lubricated and remote lubrication can be provided. The roller turn takeup, right, is shown with a spring-adjusted takeup, normally used for general applications. Use one of the automatic takeups for high temperature applications.



where conditions do not justify the use of the next heavier conveyor. Load bars often enable you to standardize on one trolley size. One style of load bar divides loads equally between two trolleys at all angles up to 60 degrees. Another has greater traverse stability and less pendulum action and is recommended where carriers are automatically loaded or unloaded.

Wheels and Bearings

Wheels are made of steel for most conditions. But if there are explosion hazards use beryllium-copper wheels. They have the same capacity as their steel counterparts and are nonsparking. Conveyor trolleys with nylon wheels are suited for moist operating conditions and are also adaptable for explosion proof installations. They can handle loads up to 250 pounds per trolley.

Both standard and lubricated-

for-life bearings are available. The outer races of standard bearings turn as an integral part of the wheel. Both wheels and races are hardened steel. Lubrication fittings for manual or automatic lubrication with pressure systems is available. Lubricated-for-life bearings have lubrication sealed in, are used when grease drippings would be harmful. However, they are not recommended for high temperature use. Where temperature is high and grease cannot be allowed use graphite impregnated bushings.

The track is the main load carrying member in a trolley conveyor. It is the carrying capacity of the flanges of the track beam, without flaking or deformation, that usually determines trolley load ratings.

Turns and Curves

To change elevation you need an accurately formed double curve.

The radius must be carefully selected because it will affect the amount of additional force that bears on the flange of the I beam. A system carrying loads from one level to another won't carry as much as a monoplane system.

Allowable vertical curves depend on trolley spacing; the closer the trolleys are together the sharper the curve can be. Backstops on uphill runs will prevent the trolley chain from moving backward in case the chain should break. Use antirunaways on downhill runs to stop the chain if it should start going too fast.

The minimum radius for horizontal turns depends on the load clearance and the type of turn used. A 12 inch diameter is the smallest for roller turns; if you use traction wheel the smallest turn should be about 18 inches, although there are some 12 inch turns. Roller turns are often

(Continued on page 104)



STACKING RESERVE STOCKS to high elevation is done by counter-weighted fork truck. This provides extra lift needed to make more cubage available for storage. The top of the load is 15-feet in the air.



ORDER PICKING is made with an electric walkie pallet truck. More tonnage is moved daily and store orders are completed faster. Less effort is required from the picker. Note adjustability of rack levels.

One Rack for Any Size Any Shape

FLEXIBILITY became the watch word and set the theme for material handling planning when Power Super-Markets, Limited decided to build a new warehouse.

This firm, located in Toronto, had operated from a 17,600 square-foot multi-story warehouse without power equipment and without racks.

The new warehouse has a floor area of 100,000 square feet (capacity to service 30 stores.) Another 100,000 square feet can be added if the need arises.

Power Super Market realized from the beginning of its anticipated expansion that material handling is the core of a warehouse operation. Management looked not only at immediate needs but projected its thinking 10 years into the future.

As a result, Power operates more efficiently than most grocery warehouses.

Material comes in by rail and truck on one side of the building. It goes out by specific store order on the other side. Instead of inflexible set racks, the

warehouse is equipped with easily adjustable pallet racks called Flexirack.

Some shelves are set on different levels in order to make the best use of rack space. Top shelves are designed for 8000 lbs. capacity and intermediate adjustable shelves for 4000 lbs. All pallet loads on the top shelf and above are "reserve" stock.

There is no scarcity of aisle space at Power. A walkie and a fork truck can pass down the same aisle without interruption or traffic jams.

Pallet placement is by counter-balanced fork truck. Order selection is done by electric walkie pallet trucks. At the completion of order selection, a fork truck takes the pallet load to the shipping area. There the material is transferred to delivery trucks.

Company officials point out three advantages of the new operations:

1. Faster operation resulted from a change to counter-balanced fork trucks;
2. Maintenance costs were slashed;
3. Racks are easily adjusted to fit any size product.

DIESEL



New Power for Handling Equipment

DIESEL power new? Yes, it is, to many material handling men. But in the transportation, construction, roadbuilding, petroleum and marine fields, it is a veteran.

The Diesel engine has long been recognized as a heavy-duty work-horse for powering many types of outdoor mobile equipment, standby generators, pumps and compressors. Now, manufacturers have been able to reduce the size and weight of Diesels. Furthermore, they have been able to obtain higher speeds necessary to drive small equipment. As a result, greater areas of use have been opened in material handling.

Manufacturers point to economical operation, low maintenance, long life, low downtime and a high level of safety as points in favor of Diesel engines. Economy comes from two factors: (1) Inexpensive fuel is burned; (2) The relatively high compression ratios

result in more power. It is the same thing as "more miles per gallon," in automobiles.

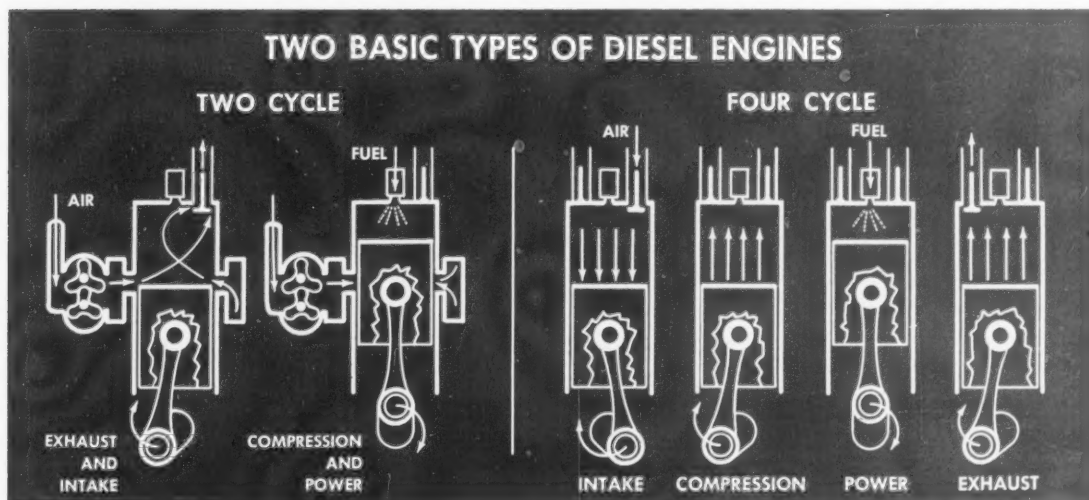
The high safety factor can be attributed primarily to a low fire hazard in Diesels. They have no spark plugs and use a fuel which requires very high temperatures for ignition.

What Is A Diesel Engine?

The Diesel is an internal combustion engine which ignites its fuel (usually oil) by the heat of compression.

Air is compressed into a combustion chamber to about $\frac{1}{15}$ its original volume. The work of compressing the air generates heat and the higher the compression ratio the higher the temperature of the air.

(Continued on page 79)



What we found out
when we examined our . . .

Conversion to Diesel

by Frank C. Wier
Superintendent Material Handling
Steel and Tube Division
The Timken Roller Bearing Co.

THE TERM, "conversion", when applied to material handling practice, implies both a mental and a physical change. At the Steel and Tube Division of The Timken Roller Bearing Co., we started a physical conversion to Diesel engines for various mobile handling units in late 1951.

A detailed study of the results of our Diesel operations have resulted in a mental conversion too. We are now convinced that Diesel engines are best for our particular work.

The Diesel engines involved in the conversion are all light weight, high speed units. Here is a list of the quantities of the various size engines in our program:

| Quantity | Size (cubic-inch displacement) |
|----------------------------|-----------------------------------|
| 4 | 169 |
| 2 | 166 |
| 3 | 249 |
| 17 | 298 |
| 17 | 404 |
| 43—Total Number of Engines | |

Since the greatest number of units are involved in the 298 and the 404 cubic-inch categories, we will deal with data accumulated from those engines. For the

same reason, we have developed more information and have learned more about those two groups.

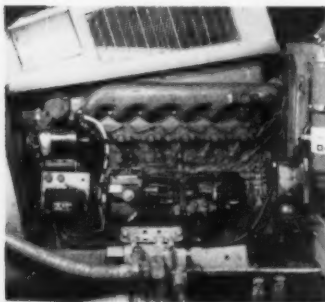
Where Engines Are Used

The 298 cubic-inch engines are used in 20,000-pound capacity fork lift trucks which are used in many different applications in our steel mill. Almost all are employed on a 24-hour-a-day basis and vary from five to seven days a week. The smoke problem in closed mill buildings is at a satisfactory minimum level. We think that our preventive maintenance program has proven reasonably effective.

The 404 cubic-inch engines are installed in straddle carriers which operate primarily outdoors.

Both the fork trucks and the straddle carriers are serviced at intervals of 150 to 175 hours of usage. At times the usage runs more than the 175-hour limit, but this is not allowed to happen repeatedly. An engine service job consists of the following . . .

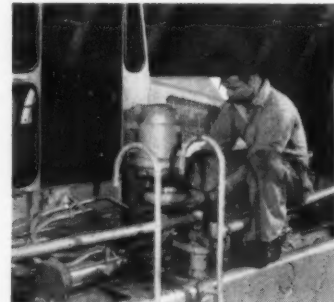
- Engine oil is changed.
- Engine oil filters are changed.
- Fuel filters are cleaned.
- Air cleaner is serviced.
- Fuel injection pump and governor lubricating oil are changed.
- Valve tappet clearance is adjusted.
- Fuel injectors are checked for proper pressure and spray pattern.
- Water thermostats are checked to insure proper engine heat.



EASY ACCESS to all parts of the Diesel engine in straddle carrier helps make maintenance easier.



PREVENTIVE MAINTENANCE must be change of oil filter. Engines use extra large sock type oil filters.



AIR CLEANER is cleaned as part of preventive maintenance program for long, trouble-free life.



STRADDLE CARRIER is powered by 404 cubic-inch Diesel engine. The small hump on top of the hood is the only change required in general outline of engine.

- i. Water pump and cooling system are checked.
- j. Tension of fuel pump drive chain and timing are checked.
- k. A general tightening of oil pan, engine side covers and replacement of gaskets, as required.
- l. Belts are adjusted.

Temperature Problem Solved

In March, 1957, certain improvements were made in the cooling system of the 298 cubic-inch engine along with the universal installation of a giant size thermostat. Prior to the change, it was difficult to maintain proper temperature in a uniform pattern for all units. Furthermore, we had been unable to get the length of service which we felt should be expected from all engines. We had noticed, however, that in engines where the temperature could be reasonably well maintained, life span was satisfactory. A list of the long life units looks like this:

| Vehicle | Date Installed | Service to Date (hours) |
|---------------------------|----------------|--|
| No. 26 Fork Lift Truck | 11/11/54 | 13,964* |
| No. 28 Fork Lift Truck | 4/5/54 | 16,117 (prior to a complete overhaul) |
| No. 32 Fork Lift Truck | 6/2/55 | 9,325* |
| No. 38 Fork Lift Truck | 11/16/55 | 10,314* |
| No. 35 Fork Lift Truck | 11/26/55 | 10,082* |
| No. 24 Fork Lift Truck | 5/14/56 | 8,738* |

*At the time this report was written, these engines had had no attention other than preventive maintenance at regular intervals.



FORK LIFT TRUCK has been converted to Diesel power without any change in outer appearance of the truck. Truck's engine has 298 cubic-inch displacement.

The following table shows the number of hours run by five 404 cubic-inch engines:

| Vehicle | Date Installed | Service to Date (hours) |
|----------------------------|----------------|-------------------------|
| No. 8 Straddle Carrier | 7/30/55 | 12,824 |
| No. 1 Straddle Carrier | 9/17/55 | 12,232 |
| No. 10 Straddle Carrier | 12/5/55 | 11,368 |
| No. 4 Straddle Carrier | 10/27/55 | 12,706 |
| No. 7 Straddle Carrier | 1/18/56 | 11,513 |

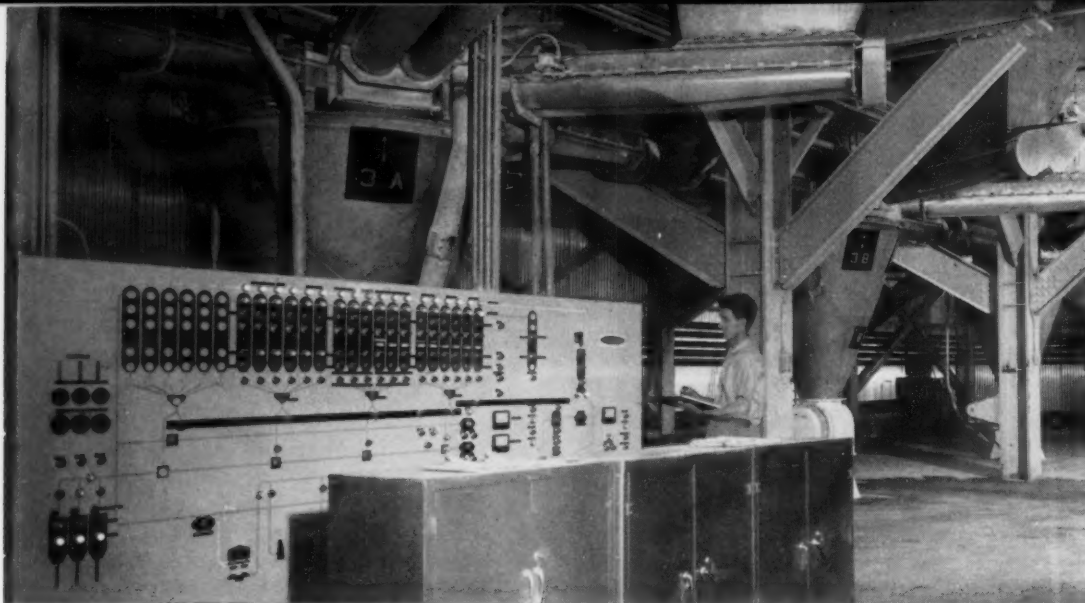
The engines included in the above table have had no repairs other than normal servicing. Here are brief service reports on an additional group of the 404 cubic-inch engines:

Engine on No. 5 Straddle Carrier—installed 6/2/55. After 12,462 hours it was completely overhauled. Reason, excessive blow-by.

Engine on No. 11 Straddle Carrier—installed 12/5/55. It had run 9,952 hours when the No. 6 combustion liner broke. A new head, one rod and piston assembly were installed. The engine was reinstalled in No. 11 Carrier and has run 1,781 hours to date.

Engine in No. 12 Straddle Carrier — installed 9/1/55. It ran 10,964 hours with only routine service. At that time the head was removed for head gasket replacement and we found that the engine had warped valves. It was reassembled with new valves and valve springs. It ran an additional 611 hours before it was necessary to apply new combustion liners. The engine was then installed in No. 13 Straddle Car-

(Continued on page 107)



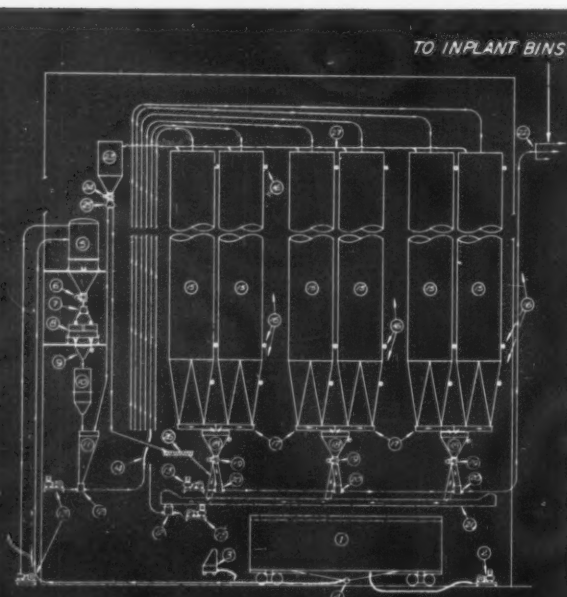
GRAPHIC PANEL BOARD tells the operator at a glance what is happening. The arrangement is so flex-

ible that all three major systems—unloading, blending, and distribution—can be operated at the same time.

Push Button Handling With Air

With bulk handling and positive pressure pneumatic units C. F. Mueller Co.—

- Saved more than 25,000 square feet of floor space.
- Saved more than \$150,000 a year over the previous handling system.
- Simplified close check weighing of incoming raw materials.
- Increased safety because there are a minimum of moving parts to create accidents.
- Found it easier to maintain the high standards of sanitation required.
- Freed more than \$40,000 of equipment for other use.
- Reduced housekeeping and maintenance operations.



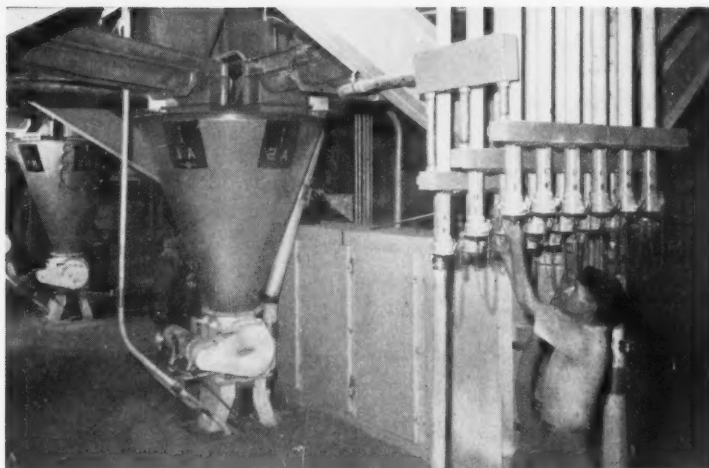
WITH JUST ONE MAN on each shift, the C. F. Mueller Co. unloads, blends, and distributes about 125 million pounds of flour a year at its six-story plant in Jersey City, N. J. A control panel shows how the entire handling system is performing.

The system was designed and engineered by the Mueller Co. with the cooperation of Sprout, Waldron & Co., Inc.'s Material Handling Division. These requirements were set down at the beginning.

1. At least one carload must be unloaded and conveyed into storage in 4 hours.
2. Maximum diversity of storage must be available.
3. Sizing must be at least as fast as unloading.
4. Inplant transfer must be at the rate of 20,000 to 24,000 pounds an hour. (Operating rate is now 30,000 pounds an hour.)
5. Complete flexibility of blending and distribution.

Material Handling Flow Sheet C. F. Mueller Co., Jersey City, N. J.

1. Airslide car. 2. Blower to activate airslide car.
3. Portable dump hopper. 4. Unloading manifold.
5. Product recovery unit. 6. Rotary vane airlock.
7. Stream splitter. 8. Sifter. 9. Surge hopper with high level indicators. 10. Scale. 11. Surge hopper.
12. Blow-through feeder. 13. Blower. 14. Manual switch station. 15. Storage silos. 16. Level indicators. 17. Twin screw feeders. 18. Blending hoppers.
19. Rotary vane airlock. 25. Two-way valve. 26. Drop bottom screw conveyor. 27. Dust collector.



SWITCHING station enables the product to be conveyed to any of 18 silos. The 3 blend hoppers are located under clusters of 6 storage hoppers.



FIRST FLOOR view reveals huge capacity of the storage system.

How It Was Done:

A 4,000 square foot addition was made to the plant to support 18 sanitary steel silos. Each has a capacity of about 150,000 barrels of flour to be used in macaroni and egg noodle products—a total storage capacity of more than $2\frac{1}{2}$ million pounds. (Nine more silos can be added later.)

Positive pressure pneumatic units are used to move the tremendous amount of material because of the speed, accuracy, and sanitary characteristics of air handling.

The Unloading System:

Material is removed from Airslide hopper cars by a vacuum pneumatic system which elevates it to a product recovery unit, sealed by a rotary vane airlock. The gravity stream from the airlock is split between two sifters which screen out oversize material and pass the flour to a surge hopper. It has a high-low level indicator to keep the flow continuous. From the surge hopper, the flour continues to fall into a scale where it is automatically weighed and recorded. It then passes into another surge hopper from which it is blown by a positive pressure system to any one of the 18 silos. The blow-through feeder is driven by a variable speed motor to enable it to handle the various densities.

The silo to receive the material from the blow-through feeder is selected at the manual switching station. By transferring the flexible hose to one of the 18 air pipes, the flour can be conveyed to the proper silo. Material from the blending system (as well as the receiving system) is also fed in through the manual switching station and can be conveyed into preselected silos. Special electrical plug type interlocks are used so that after the hose is connected to the proper pipe, the interlock must be plugged in before the system can start. Neither will the system start if the silo to which material is to be sent is full.

Each silo will hold $1\frac{1}{2}$ carloads of flour. Large vent lines take the air and dust to a central continuous automatic filter unit. These return lines have automatic shut-off valves to enable the dust collecting system to serve one or two silos at a time. Vacuum pressure relief hatches at the top prevent an excessive vacuum from being exerted on the silo. About 15 tons of incoming flour can be handled an hour.

Silos are arranged in clusters of six. Each cluster is discharged by screw feeders which take the flour to special blending surge hoppers, which in turn discharge into rotary valves with two discharge spouts. A reversing switch on the drive motor selects the desired discharge spout. One spout goes to another blow-through feeder, from which material is conveyed to mixers in the plant. The other discharges to a chain conveyor which is used to obtain blends using a combination of the material stored in the 18 silos.

The chain conveyor passes under each of the three blend hoppers. Any combination of blends can be discharged into the chain conveyor. The blends are picked up at the blow-through feeder and conveyed to the switching station so that it can be deposited into any of the storage silos. With this method, specific blends can be made considerably in advance and when needed can be unloaded and discharged to the plant.

The system allows Mueller to blend durum and spring wheats to produce a consistent product of high protein content. Material can be removed from any two or several of the silos at a predetermined rate and combined into a homogenous blend. This material is then conveyed by the positive pressure pneumatic system to any of the silos for storage.

A positive pressure pneumatic system conveys blended material from the storage silos to the processing plant. By a preselected plan this system automatically fills any of the bins in the processing plant as they require material. Capacity of the system is 10 tons an hour.



VERTICAL STACKING of these plumbing parts on steel pallet racks takes up much less floor space.



PALLETIZATION of bulky tubs provides much added floor space as the floor pile height is increased.

Plumbing center gains space by . . .

Planned Storage of Loose Parts

SPECIALLY designed handling equipment, keyed for bulk storage efficiency, is helping cut costs at the Crane Co.'s new Chicago warehouse.

Over 10,000 items are stored, including 5300 different plumbing parts, and 3500 jobbed items. They range in size from tubs, radiators, shower stalls and large valves, down to small castings and hardware kept in wooden pallet boxes.

High storage, palletizing of material that formerly was piled on top of one another, specially designed storage racks, and use of Moto-Truc lift trucks are all helping spell savings to the company.

"The money we have saved on floor space through this increased use of height has been more than enough to cover the cost of the lift trucks and other equipment . . . and it leaves a tidy profit besides . . ." says one company official. He adds that it is now far easier and quicker to move merchandise in and out of storage which isn't included in this profit, ". . . but which is even more important."

The racks are a first on the storage improvements. They are made from 10-gauge steel, and are composed basically of beams and columns which form three tiers of shelves. Openings are 106 inches wide, 36 inches deep, and a minimum of 30 inches in height.

Horizontal members fit into slots in the rack upright. Slots are spaced six inches apart. Shelf height can be increased in six inch increments. Each shelf

holds two 48 x 40 inch pallets placed side-by-side.

Tubs, radiators, and other bulky items are now stored in the racks. Appreciable floor space has been gained, as formerly, they were kept in separate floor stacks only a few feet high. Now they rise 15 feet.

Floor stacks are still employed for tubs, shower stalls, and other equipment that must be stored in large quantity. But now it is all palletized. Before, units were merely piled one on another. Higher pile heights and expedited movement of stock in and out of storage results in the new method.

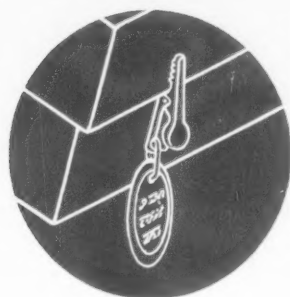
Wooden pallet boxes are used for small valves, plumbing brass, and other items that spill easily when stored. Previously, they were kept in sacks bearing paper tags. The boxes, besides being easier to handle, give product visibility.

Reserve stock area occupies about 90,000 out of 106,000 square feet within the warehouse. The remaining area holds duplicate inventories of some heavy demand stock which further expedites order filling.

By using powered lift trucks, instead of manual handling, time to move a bulky item from the receiving dock to reserve stock area, or from reserve to shipping area, has been cut 50%. In some cases, this figure goes to 75%. Pallet racks have reduced consumption of floor space on some products by as much as two-thirds.



ORDER PICKING is eased by gravity storage racks which move stock directly to operator. Note restock warning clip in the circle.



Live Storage Speeds Deliveries

Identification clips and gravity feed racks help keep gloves moving to market at rates to fit any demand.

A MECHANIZED ORDER department insures better service for customers of Hansen Glove Co. Key plan of the firm's Milwaukee plant is to maintain a complete stock at all times. Two custom built gravity feed storage units called "Quik-Pik" make this possible.

Incoming orders are now filled in record time from this main storage point. Several types of material handling equipment have been integrated to provide a well-planned operation. Electronic equipment maintains complete stock control. And, in use too, is an automatic "near-out-of-stock" warning system.

The storage units, designed by the North American Equipment Corp., form the center of the order selection department. Gloves are brought from storage areas and are placed in special slots which indicate color and size. Runways 12 feet deep feed over 2000 items to a single selecting aisle.

Three workers stand in the center and fill each order as to individual requirements. They place a



STOCK REPLENISHMENT is from four-foot high platforms behind each of two 12-foot deep runways. Stock truck is conveniently positioned by hoist for operator to fill slots.

completed order on a conveyor. It is carried first to a checker, next to a packer, and then to the shipping department for loading onto carriers.

Restock Warning:

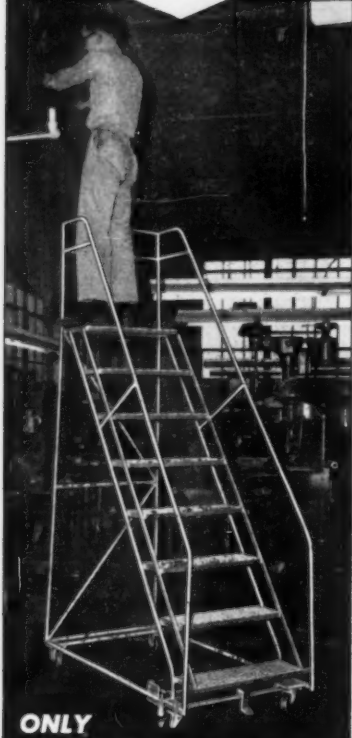
A clip and key tag attached to the second or third from last box in each runway indicates that replenishment of a particular item is necessary.

When such a box reaches the front, the order selector removes the clip and places it in a box at the head of the aisle. This notifies the restocking clerk.

Tags indicate reserve locations for each item and the amount to bring forward. Merchandise to be restocked is put on a castored floor truck. Because of the slope required for the sliding runways, the Quik-Pik is four feet higher in the rear than in the front.

An overhead monorail and hoist raises the truck. It is then moved to the best restocking position anywhere behind the 43-foot long rack.

HIGH-UP SECURITY
gets jobs done
faster!



ONLY BALLYMORE "Hi-boy" LADDERS

have exclusive
PYRAMID design
and automatic



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**ALL-WELDED STEEL FOR REACHING
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LOOK FOR
THIS LABEL
TO BE SURE
IT'S THE BEST



Circle 22 on Reader Service Card



Dry Lubricant Helps Insure . . .

Efficient Lifting At -15° F

HOW DO YOU lubricate lift truck slides for work in sub-zero temperatures?

That was a major problem at Seabrook Farms, Inc. The world's largest producers of frozen foods has an answer. The firm stopped using grease and substituted a dry film solid graphite lubricant.

Fork lift trucks at this 58,000 acre plant are subjected to many unusual use conditions.

They operate in severe outdoor exposures of heavy dust, rock and stone chips, mud, rain. Indoor temperatures drop as low as 15 to 16 degrees below zero. Moreover, strict rules against contamination have to be considered.

Periodic hardening of grease from low warehouse vault temperatures became the company's principal maintenance problem.

For nine months, tests were conducted on 30 fork lift trucks using a graphite made by the Joseph Dixon Crucible Co. Although dry, it is applied with a brush, like paint. It dries quickly, forming a smooth film.

During the period of the test, each application performed continuously for 1,000 hours in comparison to only 100 hours for each grease application.

The tests further revealed that the lubricant withstands acids and alkalis in addition to heavy pressures, extreme weathering, moisture, and abrasion.

Seabrook officials point to five main benefits from the change: easier application; effective sanitation; less frequent application; no contamination of slides or lubricant; and no change in lubricating properties during usage.

DIESEL — NEW POWER FOR HANDLING EQUIPMENT . . .

(Continued from page 71)

In most Diesel engines, this temperature is from 800 to 1000°F. which is hot enough to ignite a fuel oil spray.

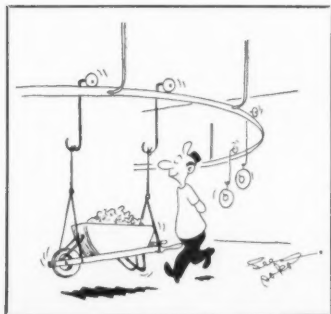
There are two basic types of Diesel engines, the two cycle and the four cycle.

The two cycle engine makes two strokes, one up and one down, for each explosion in the cylinder. Air is supplied to the cylinder by a blower or supercharger when the piston nears the end of its downward, or power, stroke. At the same time, two exhaust valves in the top of the cylinder open to allow waste gases to be blown out. Compression is on the upward stroke.

In the four cycle engine the piston moves in and out twice for each explosion. The first downstroke draws air into the cylinder and the first upstroke compresses the air. Oil is forced into the cylinder and ignites, driving the piston down a second time. On the next upstroke, the piston drives out the waste gases.

Uses for Diesel power are increasing constantly. Several lift truck manufacturers offer Diesel engines as original equipment. So do manufacturers of yard locomotives, mobile cranes, straddle carriers, front-end loaders and some conveyors. In some cases, satisfactory conversions to Diesel can be made by the user (see "Conversion to Diesel," page 72).

MHE thanks the following companies for help in preparing this report: Allis Chalmers Mfg. Co., Engine-Material Handling Division; Detroit Diesel Engine Division, General Motors Corp.; Hercules Motors Corp.



SILENT HOIST KRANE KAR

HYDRAULIC Boom Swinging,
HYDRAULIC Topping, HYDRAULIC
Telescoping, HYDRAULIC Load
Hoisting! Fluid Drive, Power
Steering. 5 sizes: 1½, 2½, 5,
10 and 12½ ton capacities.
Ask for Bulletin No. 79.

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everything gets done faster,
better—at savings!

Just add a SILENT HOIST KRANE KAR or LIFTRUK to your materials handling program—then watch them accelerate your Receiving, Production, Shipping and Plant Maintenance operations! With today's competitive markets and rising labor costs, SILENT HOIST helps you increase your output per man . . . lowers your production costs! Worth looking into?

SILENT HOIST & CRANE CO., Brooklyn 20, N.Y.

9 sizes: 3, 5, 6, 7½, 8,
10, 12, 15,
30 tons capacity.
Fluid Drive,
Power Steering.
Ask for
Bulletin No. 77.

SILENT HOIST LIFTRUK





Depend on your AIM* ... Downing Box Company did ...

Push-button strapping machine unitizes KD cartons

Downing Box Company, Milwaukee, Wisconsin, wanted to streamline the unitizing of KD corrugated cartons. Their Acme Idea Man came up with a solution that has meant easier handling, better stacking and greater product protection: a new system incorporating the Acme Steel F-3 Strapping Machine. (Idea No. S3-49)

Now, with a single F-3 Strapping Machine, up to 100 units are strapped in an 8-hour shift with one operator.

The F-3 successively compresses the unit and tensions, cuts and seals one strap—or two or three straps simultaneously—while the unit is still under compression. Air-powered and electrically controlled with push-buttons, it applies each strap with uniform, pre-determined tension.

***Depend on your Acme Idea Man.** Ask him for ideas that will give you easier handling, better storage, faster and safer shipments. Write Dept. MJS-29, Acme Steel Products Division, Acme Steel Company, Chicago 27, Illinois. In Canada, Acme Steel Company of Canada, Ltd., 743 Warden Ave., Toronto 13, Ontario.

Acme Idea Man
Harold Meyer
introduced the
F-3 Strapping
Machine to Downing
Box Company.



STEEL STRAPPING

Circle 3 on Reader Service Card for more information



PACKAGING AND

SHIPPING SECTION

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What You Should Know When You Buy Packaging

ONE OF THE TOUGHEST JOBS in most plants is that of setting up the packaging line. The stumbling block: packaging machinery—what to buy, and how to buy it.

When it comes to packaging machinery, you usually can't just look through a catalog and pick out the machinery that suits your needs. Those who can are a lucky minority.

The trouble stems from the fact that few packaging jobs are alike. When you want to buy a fork truck, or a lathe or milling machine, it's usually a matter of picking a stock item that meets your specifications. But that's not the case with packaging machinery. More often you will be buying something custom-built for your plant. And since it's being designed special for you there's practically no limit, in theory at least, to how elaborate it may be. Packaging machinery manufacturers can design machines to do just about any packaging job you can think of, *if cost is no object*. But of course the budget is always a limiting factor. You have to weigh the expense of the equipment against benefits it will give you, keeping a clear view of what you want the machine or machines to do. Remember, you're not just buying a machine; you're buying an answer to a problem. Only you can decide how big a problem you want to bite off.

Good packaging is good material handling:

Not many people will argue today with the idea that packaging and material handling are inseparable. Not only do they overlap, but they augment each other. For a well packaged product must be easy to handle. But more than that, it must be handled well *while being packaged*, or the operation is wasting money.

Things to consider:

Amortization—A quick write-off of packaging machinery is a must. Packaging methods change so fast that your present method may be obsolete before you know, and you'll need new machinery. And, just as likely, your product may change. Most companies try to make a packaging machine pay for itself in two years or less.

Flexibility—Avoid, if you can, equipment that can do only one thing, one way. You may want to change the size or shape of your package. Or you may need to change the packaging line layout. There's a limit to how much flexibility can be built into a machine economically; you reach a point where it's cheaper to buy another machine. But in general, buy packaging machinery as versatile as possible.

Speed—High-speed equipment is usually a big advantage, but now and then it may be a disadvantage. Packaging must keep pace with production, but the question arises: should you use one high-speed machine or two slower ones? The faster the equipment the more it costs to buy, operate, maintain, and repair. And when it breaks down or has to shut down for maintenance the pile-up may be crippling.

Type of power—Most packaging machines are powered either by air or electricity. Electric-powered machines usually come with their own motors. If they're powered by air you must supply the compressed air; they don't usually come with compressor.

Layout—One of the toughest problems, though newest designs make it easier is fitting the equipment into the space available for it. The machinery must be accessible for maintenance. There must usually be room for storage nearby (pallets, containers, etc.) And the machinery must be placed where it best integrates with adjacent production and handling equip-

"Packaging in the United States since the war has grown at a faster rate than any other industry. This only serves to emphasize the importance of the careful selection of packaging machinery, methods, supplies, and material handling. In today's highly competitive industry, it is difficult to overestimate the interrelation of these four factors."

—J. Henry Richmond, President, Potdevin Machine Co., Inc.
President, Packaging Machinery Manufacturers Institute



Machinery

ment. This indeed, is one of the biggest reasons why you can buy few packaging machines off-the-shelf.

Specifications—Your packaging machinery supplier must know all the specifications of your product, methods of shipping, types of containers, present and future production rates, and details of surrounding handling and packaging machinery. He'll even want to know door sizes and elevator sizes in your plant. Once you give him these specifications, stick to them. Changing your mind can be expensive.

Cartoning equipment:

Recent improvements in carton materials, and in the design of the cartons themselves, have brought about big changes in cartoning machinery. The emphasis is on more protection for the product, and on faster packaging. Competition and rising costs have caused many firms to turn to cartoning machines that can give them these advantages.

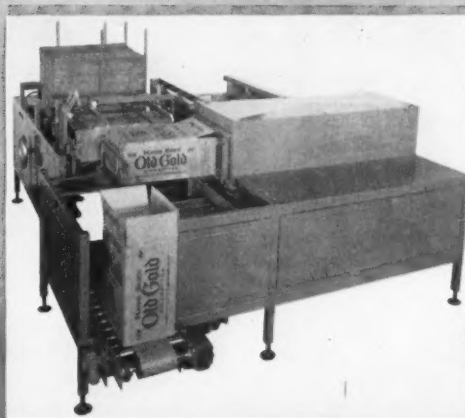
Carton loading machines feed the carton from a magazine, open it, load the product or products into it, and close it by tucking or gluing or a combination of both. They are available for top-loading or end-loading cartons. They may be automatic or semi-automatic.

These machines use two basic design principles: intermittent motion and continuous motion. Machines designed for intermittent operation have a pause in the cycle, during which the loading takes place. It is this pause that makes them intermittent. Continuous motion carries the product through smoothly, with no pause in the cycle or between cycles.

In general, use intermittent motion machines where the product is not delicate or easily damaged, where high speed is not needed, or where difficult assembly of multiple items makes continuous motion impossible. Use continuous motion where high speeds are important, or where gentle handling of the product is a must.

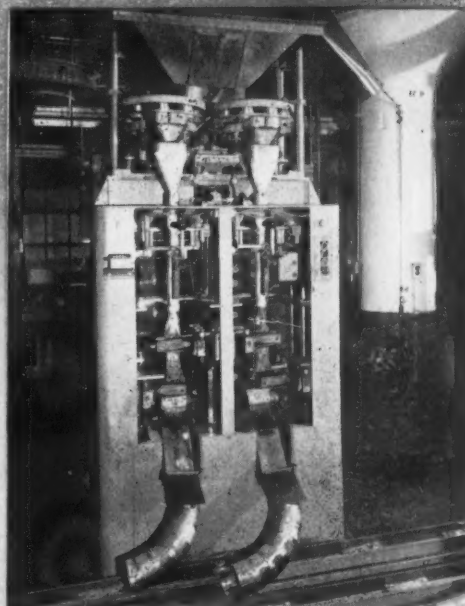
You can get cartoning machines that will load several things in the same carton. It's common, for example, for one machine to load the product or products, insert instruction manuals, liners, and accessories all in the same cycle. Many of these machines even inspect for no-load cartons, and eject any that got through the machine with any part of

Don't just buy a machine . . .

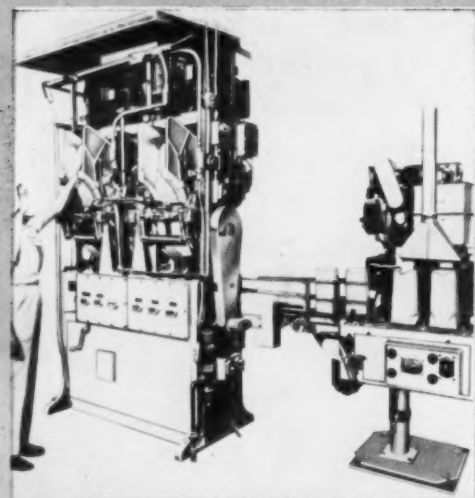


AUTOMATIC CASE LOADER packs cartons of cigarettes into end-open corrugated boxes at P. Lorillard Co. plant. This machine forms the case then loads it fast but gently. Available also for cans, etc. A sealer can be added to seal flaps with cases either standing up or on their sides.

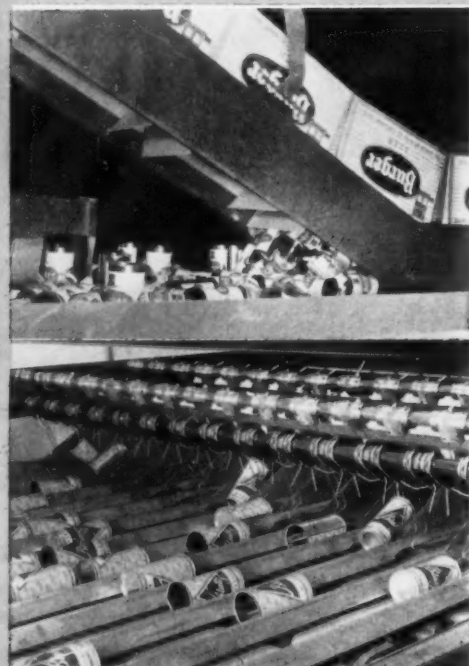
. . . but answer a problem.



CEREAL PACKAGING at General Mills is done by high-speed automatic machines like this. They form, fill and seal pillow packages at the rate of 100 a minute. They're adaptable to a variety of products, and will wrap them in cellophane, paper, polyethylene, plastic, or other materials.



BAGGING MACHINE fills 2-lb to 10-lb bags with flour, etc. at speeds up to 40 a minute. It is accurate within .2 oz. It needs only one attendant, does the work of 2 conventional machines and 4 attendants. Bagger and scale can be used together or independently as desired.



UNLOADERS AND UNSCRAMBLERS improve handling at the weakest point in many packaging lines: the beginning. Unloading (top) drops cans gently onto conveyor which takes them to unscrambler (below). As cans pass under hooks those facing wrong way are flipped forward.

the load missing.

Case loaders and sealers:

Things to look for in this type of equipment are versatility, speed, size, and ease of maintenance.

One of the most interesting developments in case loaders is the end-loading machine. These load the product, whether cans, cartons, or other shapes, into the carton from the end rather than top, in one or more tier. End-open containers cost considerably less than their equivalent in other styles because they use less container material, having smaller flaps (see page 87).

Case loaders should be adjustable, or convertible to different sizes at a reasonable cost. If they're designed for high speed or exact fitting containers they should have an automatic feeder-former-positioner, or have provisions for adding one later.

Many manufacturers feel that case loaders are now about as small as it's possible to make them. Any further savings in space must be in the case sealer, and there's much progress in that direction. Case sealers no longer have to be on a straight line. They come with circular or even vertical compression units. And now it's possible to get sealers that take even mixed size boxes.

Pouch formers, fillers, and sealers:

These machines can be anything from simple manually operated units to complete, automatic, high-speed packaging lines. They're usually used for low-cost high-volume products like candy, cereals, tea, pills, etc. Lately they're used for liquids too, and for one-serving food packages.

The pouch is made of a flexible material, usually transparent, and usually heat-sealable. It's generally made from a web or roll of stock, cut to size, printed, formed, filled, and sealed by the one machine. Special attachments can add tear tapes, tea bag strings, paper collars, etc.

In selecting this type of equipment, be sure first of all that you have enough volume to keep the machine busy, and to justify automatic packaging.

Labelers and markers:

The general-purpose labeling machine is still one of the most widely used. But in many cases it is giving way to the more specialized machines which, though more expensive, can do the job cheaper and faster.

Your choice of labeling machine depends largely on the type of container, type of label, and production speeds. However, most modern labelers can work faster than the production line they're going to be used on, so production speed isn't as important a selection factor as the other two.

Pick the best label for your needs, then buy the machine to apply it. It may apply full wrap-around spot-glue labels on round containers, apply gummed or pressure sensitive labels, heat-transfer complicated multi-color designs, put government stripe-tape on

(Continued on page 93)

Should You Use a Contract Packager?

An expert offering a specialized service, he has grown in stature to where he may be able to do you a lot of good

THERE ARE MANY WAYS a contract packager may help you. Like an advertising agency, tax consultant, or real estate agent, he's an expert in a tough field. And like them, he renders a service that you *could* do yourself. But take a look if you ought to.

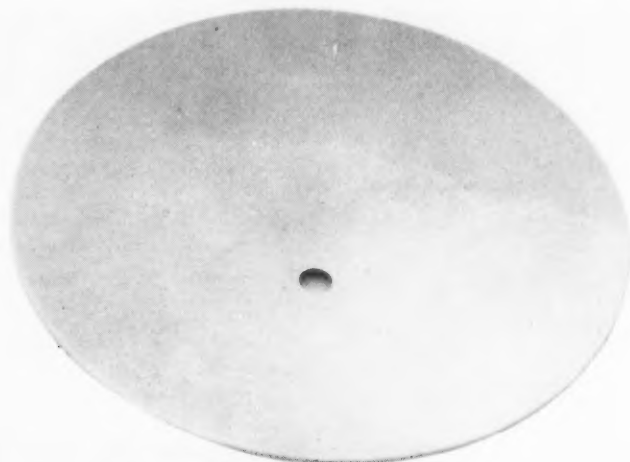
Contract packaging started out as a war baby. During the Korean War many military suppliers were unable to cope with strict and complicated military packaging requirements. They were forced to turn to outside specialists. After the war many of these manufacturers, remembering how the packaging firms had handled their problems cheaply, efficiently, and without worry, continued to turn their packaging and shipping problems over to them. From that inauspicious start contract packagers grew until now they hold a respected spot in industry. Whereas their business was almost all military a few years ago, their ratio of commercial to military customers today is about 50-50.

Here are some of the ways contract packagers help their clients:

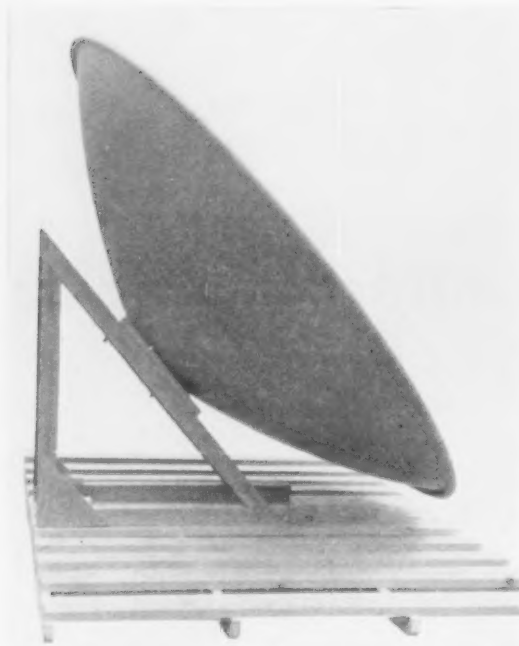
Perform entire packaging operation. Many

manufacturers turn their entire packaging operation over to the contract packager. He picks up the finished product at the client's plant, then assumes full responsibility until it is in the hands of the consignee. He designs the containers, buys all containers and packaging supplies, packages the products, supervises the entire shipping operation, and pays all bills accrued in the process. Should damage occur he handles all claims and pays for them promptly, regardless of how long it takes him to settle with the insurance company and/or carrier.

There are many reasons why the contract packager can do these things cheaper than most manufacturers. The biggest reason is that he has the know-how. He is the expert in the field, the one best qualified to do the job right. He knows the advantages and limitations of the latest packaging materials. He's familiar with carriers and freight regulations, and can pick the carrier that delivers the product as fast as necessary, but no faster. He recognizes that too much packaging is often as wasteful as too little, and knows how to avoid both. And he can buy packaging materials



HUGE RADAR REFLECTORS took careful planning to package safely, cheaply. They're 10 feet in diameter, easily damaged. Before calling in contract packager the company shipped them flat in cumbersome crates that had to be shipped by rail. This resulted in excessively high shipping rates.



BIG IMPROVEMENT in container for radar reflectors is shown in these two photos. Contract packager's main job was to reduce container size without sacrifice in protection. New container begins with a skid hav-



ing bracket of 4x4's to hold reflectors diagonally (left). Top and sides of crate are then built around it (right). Crate is smaller because 10-foot dimension is the diagonal rather than one of the sides as before.

cheaper than you can, because he buys them in volume.

Take care of special packaging jobs only.

Many manufacturers package some of their orders, turn others over to contract packagers. They may do their own packaging for all but odd lots that don't justify new equipment. Or they may turn over to a contract packager their military orders, export shipments, or jobs that are simply too tough to handle themselves.

Act as consultants. It often happens that a company is fully capable of doing its own packaging, but doesn't have anyone to set up packaging procedures. One solution is to hire a packaging engineer. But most small companies don't have enough volume to keep a man on the payroll doing packaging work full time. In these cases a contract packager can do you a lot of good by acting as a consultant engineer. He'll analyze your needs and recommend the best container, packaging machinery, and shipping method. He may even advise you on how to cut packaging costs and avoid hidden pitfalls when you're bidding on new contracts.

Standby basis. This is an "insurance type" function. Many manufacturers do all their own packaging but retain a contract packager on standby in case their own equipment breaks down, they have to shut down for model changes, their supply of containers is interrupted, etc.

A case in point:

Canoga Corp. of California is a leading electronics manufacturer. The company ran into trouble packaging 10-foot radar reflectors for shipment. They

called upon a contract packager, and careful package engineering plus shipping know-how saved the day.

The skin of these reflectors is so delicate that it's easily dented, and the slightest dent would ruin an entire unit. Furthermore, their parabolas are 10 feet in diameter and 5 feet deep, an awkward dimension for shipping, to say the least.

Because of the size of the reflectors, Canoga had been shipping them by rail. Trucks would have been cheaper, and acceptable by shipping regulations, but the 10-foot dimension was a stopper whether they were shipped flat or standing on edge.

Unhappy about shipping by rail, the manufacturer finally called upon Specification Packaging Engineering Corp., a contract packager in N. Hollywood, Calif.

Packaging engineers quickly decided that the best possible package should hold the reflectors at an angle, so the 10-foot dimension would be diagonal of the box rather than one of its sides. That would make it small enough to ship by truck.

They designed special skids with mounting brackets that hold the reflector firmly at the correct angle. Since the reflector is impervious to weather, it needs no waterproofing. After the unit is bolted to the skid, the antenna, nutator, and dehydrator are cushioned and packed in a separate box. This box is secured to the skid base, a crate (built in advance and stored knocked down) is nailed over the top and sides, and the package is complete.

Result: door-to-door truck shipments that do not require special routing, bonds, or permits.



END-OPEN CONTAINER CLOSEUP shows double corrugated at ends, where it protects against shock. Cans sit flatter. Cases are smoother, stack better.



END-LOADING PACKING MACHINE, though fully automatic, takes as many men as old (manual) way. But it's faster and it uses cheaper end-open containers.

End-Open Cases Tops for Canner

TWO MONTHS AFTER installing his first end-open case loader, Gene Carbone sat down to figure how much good it was doing him. Verdict: the machine was saving \$9,000 a year in containers alone; at that rate it would pay for itself in less than 1½ years. In addition the new cases handled better, stacked better, and protected better against in-transit damage.

Carbone is president of Hollister Canning Co., Hollister, Calif. His company packs about a million cases a year. Half of that is No. 10 cans, six to a case. The firm was first on the West Coast to use end-loading containers. What it learns is being watched by other canners; it may well bring about a major change in packing methods.

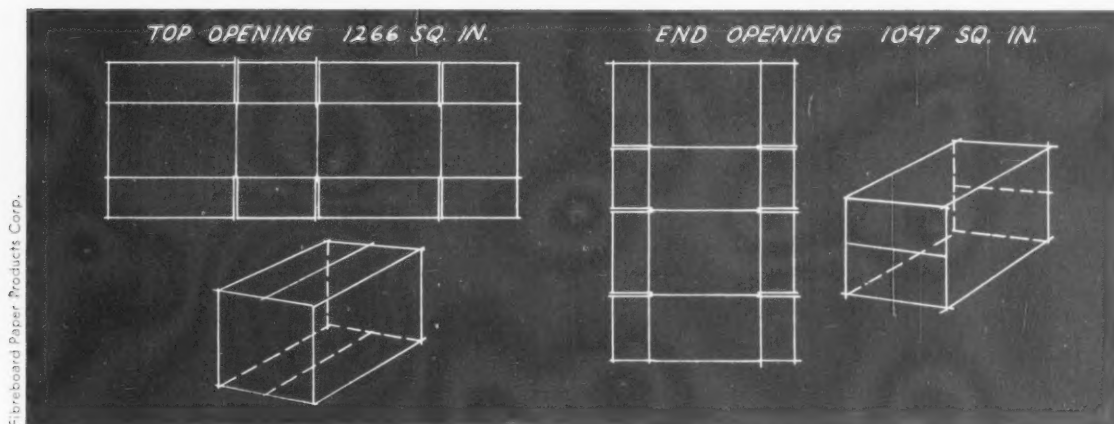
End-opening containers set up to exactly the same size and shape as their equivalent conventional con-

tainer. The difference is that they're made with the flaps at the ends instead of top and bottom. That cuts down the amount of corrugated board per container, since the flaps are smaller (see drawings below). The longer and narrower the box, the more material saved.

The idea of end-loading isn't new. The containers have been around for a long time, but only lately have there been end-loading case loaders and sealers available to take full advantage of them.

Hollister Canning packs about 500,000 cases a year that way, but Carbone figures the machine would be profitable even to firms doing half that volume. For the near future: an end loader that will case smaller cans in two or more tiers.

End-loading isn't limited to cans; you can use it for almost any product packed in corrugated boxes.



SAVING IN CONTAINER MATERIALS is shown in these drawings. These two containers are both 18½"x12½"x7" when set up. But the end-open design

(right) uses about 20 percent less corrugated board than the conventional top-open container (left). The longer and narrower the box, the more material saved.



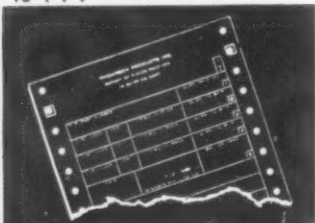
SHIPPING TICKET is taken from a load of parts ready to be shipped and given to a clerk . . .

Better Communications End Shipping Delays

by B. C. Schulte,
Data Processing Manager,
Michigan Division,
Thompson Products, Inc.



who writes information on a remote writing unit that sends it to . . .



the production department where shipping orders are typewritten by a slave unit.

WE SPEEDED shipping and reduced clerical work with a remote writing machine and an automatic typewriter. We needed the extra speed because many of our customers, especially the auto-makers, have production schedules that depend on prompt arrival of parts.

The System:

Here's how it works. A handwritten shipper that lists weight, quantity, etc., is taken from the parts that are ready to be shipped and given to the shipping department office. A clerk takes this information and sends it to the production control department with a remote writing unit. (Electronic-longhand), he writes the information in the spaces on the form with a stylus. As he writes the information appears, handwritten, on a receiver in the production control department more than 200 yards away.

The production control clerk takes the messages, then selects the proper punched paper-tape for the order to be shipped (the tape was made earlier when the sales order was typed). The order tape is inserted in the automatic typewriter to make up the invoices. Stop codes in the tape halt the machine when variable shipping information (taken from the handwritten message) must be typed in. The typewriter is connected to

a slave unit in the shipping department which automatically types out the shipping papers. Continuous forms run through both typewriters so there's no need to keep putting forms in them. About 125 orders are shipped a day.

When the slave typewriter in the shipping department finishes, the clerk removes the forms and checks them against the handwritten shipper and the sending form filled out on the automatic writing unit.

Packing slips are used as needed. The original copy is put in an envelope and given to the trucker.

Big Benefits:

We found our communications setup had taken 99 percent of the errors out of our shipping forms. And we cut 25 percent from the paper-processing time—from the completion of an order to shipment.

The system has freed seven persons for more productive work. In addition to saving the time of two persons in shipping, big savings were made in sales where four persons had to price and type sales orders, and in accounting where two had to extend and type invoices.

The clerical and forms savings were enough to write off the cost of the entire system in less than six months.

Stapling slashes costs, solves tough shipping and packaging problems for food industry

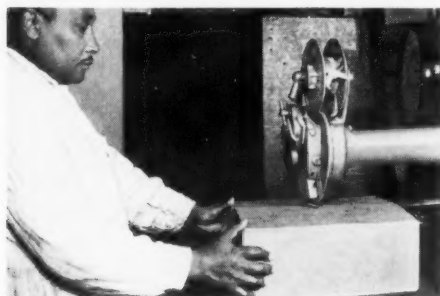
All industries have fastening problems, but they're especially critical in the food field. That's why you'll find Bostitch stapling so widely used by growers, packers and retailers.

Stapling's speed helps move perishables to market fast—for top prices. It cuts costs to safeguard profits. Staples are strong and sure. They withstand moisture and changes in temperature. 800 Bostitch staplers and 200 sizes and types of staples meet a wide range of fastening requirements.

You may need a fastening method that offers these benefits. Chances are good that Bostitch stapling can help you. One of over 300 Bostitch Economy Men, who work out of 123 U.S. and Canadian cities, will gladly investigate. He's listed under "Bostitch" in your phone directory—or send us the coupon.

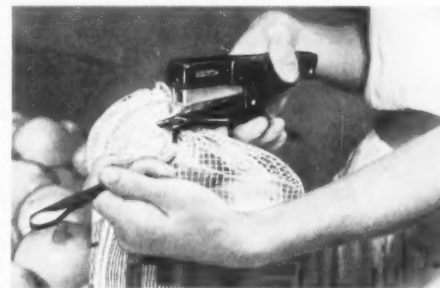


Stapling lettuce cartons in the field is 3 times faster than wire binding—quick adjust knob sets stapler for varying board thicknesses or bulging contents.



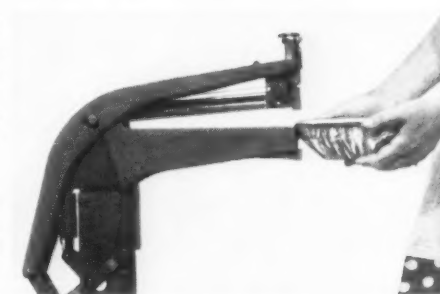
Leading meat packer finds stapling cartons 33 1/3% faster than nailing wooden boxes. Increases production while cutting labor and material costs.

Stapling beats hand tying 2 to 1 sealing grapefruit bags at citrus grove. The special forked blade speeds fastening of mesh and cloth bag drawstrings.



50 pounds of refrigerated live lobsters go in this stapled corrugated container. Stapling provides a more secure seal when boxes get wet and is faster than tape formerly used.

Stapling covers to plates for frozen pies. Staples withstand extremes of cold and moisture—pies arrive in perfect condition.



Fasten it better and faster with



Bostitch, 702 Briggs Drive, East Greenwich, Rhode Island

☐ Please send me information on stapling in the food field. I'm especially interested in stapling for _____

☐ Please send free bulletins on ways stapling cuts costs for other businesses.

I want to fasten: ☐ corrugated board ☐ leather ☐ roofing
☐ cartons ☐ plastic bags ☐ rubber
☐ fabric ☐ wood ☐ light metals

Name _____

Company _____

Address _____

City _____ Zone _____ State _____

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Announcing . . . a great name in strapping

Steel Strapping

The former USS Gerrard Steel Strapping Division is now operating as an integral part of the U. S. Steel Supply Division. Gerrard know-how, combined with Supply Division facilities, now make *U. S. Steel* the name to keep your eye on in steel strapping.

And here's what it means to you:

A complete strapping service—strapping, tools,
technical assistance—from 19 service centers!

1. USS Steel Strapping service is now available out of 19 U. S. Steel Supply Division Steel Service Centers. Immediate service no matter where you are located. A complete steel strapping program for everyone . . . strapping, strapping machines, technical assistance.

2. A greatly expanded field service force—a nationwide staff of strapping specialists *plus* the entire U. S. Steel Supply field organization—is available to meet your strapping needs.

3. A greatly expanded engineering force is now hard at work developing new concepts and producing new powerized equipment to lower strapping costs.

4. Order steel strapping—Round or Heavy-Duty Flat—from any one of a *complete* nationwide network of Strapping Service Centers, and it will be shipped to your branch plants from the *nearest* U. S. Steel Service Center.

Lower Strapping Costs . . . with new powerized equipment!

1959 is the big year for you—the year when you'll see more new ways to cut your strapping costs than ever before. They're coming soon. You can use them soon. And 1959

is only the beginning . . . the "kick-off" year in a big new program by the great name in strapping—U. S. Steel.

USS is a registered trademark



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**U. S. Steel Supply
Division of**



United States Steel

Formerly Gerrard Steel Strapping Department

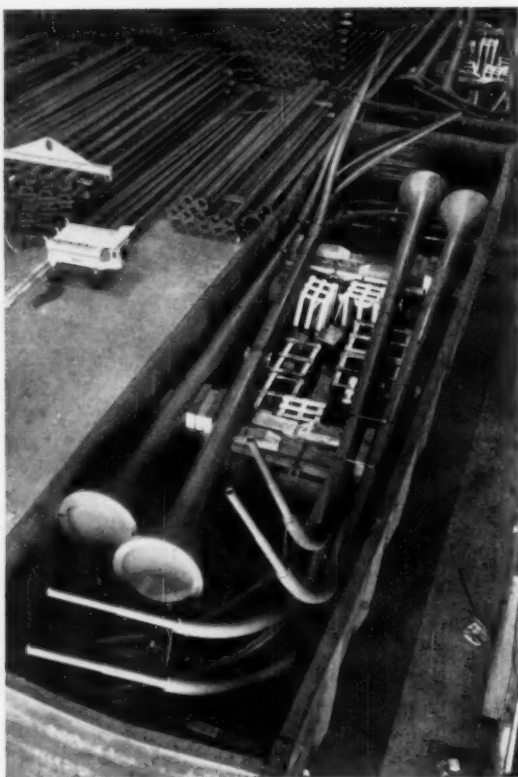
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PACKAGING & SHIPPING IDEA of the month

Shipping Problem Has Bright Finish

Chicago's Dream Lights Were a King-Size Transportation Nightmare



NOT ONLY are Chicago's new street lights the brightest in the world, they're probably the most modern. And the hardest to handle.

President Eisenhower lit them for the first time by remote control from Washington. As he did, State Street became the world's brightest thoroughfare.

That dramatic moment last November (dramatized even more by the fact that the President's "beep" signal went from Washington to Chicago by way of the Vanguard satellite), climaxed a handling and shipping problem that almost baffled a whole corps of engineers.

There are 70 of the new fixtures, covering 7 blocks of State Street. Each one weighs about 2,500 pounds. Their four curved arms, plus three 30-inch flower bowls, take up about 60 times as much space as standard poles.

To get the fixtures from its Canton, Ohio plant to Chicago, the manufacturer (Union Metal Mfg. Co.) had to ship them partially assembled in gondola cars, four to a car. A custom-built trailer shuttled them from the freight depot to the point of installation.

The three forward-curved arms of each fixture were factory assembled, with the backward-curved arm, three flower bowls, and hardware for installing shipped unassembled in the same car. Original plans called for the fourth arm to be welded to the shaft upon arrival at the freight yard, but that made the fixtures too massive to pass under Chicago's famous "El"; the welding had to be done at the point of installation.



Gondolas (above) are 41½' long by 9½' wide, easily hold 4 fixtures plus crated components. One fixture is U-bolted to each side of the car; the inner ones are steel strapped to the outside pair. A custom-built trailer takes them one at a time (left) from Chicago's freight depot to installation site. Fixtures are 36' high, 12" in diameter at base tapered to 9" at top. They give State Street 14 ft candles of light, 5 times what's needed for good lighting (right).



WHAT YOU SHOULD KNOW WHEN YOU BUY PACKAGING MACHINERY . . .

(Continued from page 84)

liquor bottles, mark, code, or print the entire label. The labels may be individually cut, or formed from a continuous roll. Some labeling machines even combine labeling with filling, capping, or other packaging operations.

Filling and sealing:

For dry products — Look for speed and accuracy in a dry filling machine. Whether for potato chips packed in boxes, aspirin tablets in bottles, or sugar in bags, the machine has to put just the right amount in the container, and do it fast.

There are two types of weighers: net and gross. Net weighers weigh the product before it goes into the container. Gross weighers do it after, weighing product and container together. Net weighers are more accurate if the container weight varies. They're more convenient for bagged products, since it's hard to support a filled bag on a scale. On the other hand, they're more likely to damage delicate products, since they handle the unpackaged product more. If yours is a delicate product, you may do better with gross weighing.

There are other ways of measuring the amount to be packaged besides weighing. One of the more common is volumetric filling. As the name implies, these machines measure by volume rather than by weight. Another filling method is by count, mechanically or electronically.

Filling speed can usually match the fastest production line. However, keep in mind that the faster the filling machine, and the more automatic, the less versatile it's likely to be. If your product consists of short runs with varying packaging needs, you may be better off with semi-automatic equipment that can be adjusted to suit your changing needs.

For liquids — The product and container dictate the filler you'll use for liquids. The machine has to be accurate, high-speed, and sanitary. Speeds up to 1,000 bot-

Don't overlook the "Hidden Values" of THILCO BLACK Poly-Kraft

It protects against—

SUNLIGHT AND LIGHT RAYS

HIGH HUMIDITY

WATER AND WATER VAPOR

GREASE AND OILS

ACIDS, ALKALIS AND ALCOHOL

No other material gives you
so much heavy-duty protection for
such economy of cost!

No longer need you fear costly product losses from the ravages of weather and other damaging elements. Thilco BLACK Poly-Kraft — the tough, durable Kraft that's coated with inert, black polyethylene gives the positive protection you can rely on. "On the job" outdoor tests prove lasting protection four times and more longer than regular asphalted grades. A light barrier, BLACK Poly-Kraft absorbs the sun's destructive ultra-violet rays and defies rain and snow which combine to decay and rot most protective coverings. Thilco BLACK Poly-Kraft is heat sealable, flexible at -60° F. and highly resistant to crease breaks, ruptures and punctures. Here's "Hidden Value" with hundreds of practical uses you can put to work everyday.



WEATHER RESISTANT SHIPMENTS



ALL-WEATHER PROTECTION



Write for
Sample Kit
— Contains
samples and
detail data on
these "Black
Magic" Thilco
Protective
Papers.

THILCO

Functional Papers FOR PROTECTION THAT COUNTS!

NEW YORK • CHICAGO
DETROIT • CINCINNATI

THILMANY PULP & PAPER COMPANY
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CYLINDA-PAK

Generalift Wirebound Cylindrical Pallet Boxes Cut Handling and Shipping Costs with Safety

Cylinda-Pak Generalift wirebound pallet boxes bring a new concept in containers for bulk handling. Strong and resilient design prevents puncture or breakage that causes spillage and allows extra high stacking without bulging. They are light in weight and have an exceptional ratio of tare weight to contents.

The carload of Cylinda-Pak Generalifts in the photo above proved they could take rough treatment and still deliver their product safely with *no spillage*. These Cylinda-Paks contained approximately 1400 lbs. each of granular material and were shipped more than 1800 miles to the East Coast. En route this car and others received such rough treatment that 2" x 8" bulkheads were shattered—some of the bulkheading is shown protruding among the containers in the center of the car—yet none of the granular material was lost.

Cylinda-Paks have sides of tough hardwood, bound by galvanized steel wires. The base of rigid plywood is mounted on hardwood skids and equipped with a special steel channel, shown above. Inside cleats at the bottom of the wirebound vertical side sections are held in the channel by a tensioned steel strap. Write for details.

General Box

ENGINEERED CONTAINERS FOR EVERY SHIPPING NEED
Wirebound Crates and Boxes • Generalift Pallet Boxes •
Stitched Panel Crates • All-Bound Boxes • Corrugated Containers

FACTORIES: Denville, N. J. • East St. Louis • Detroit • Kansas City
• Louisville • Milwaukee • Nashville • Sheboygan • Winchendon,
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541

GENERAL BOX COMPANY

1847 MINER STREET • DES PLAINES, ILLINOIS

WHAT YOU SHOULD KNOW WHEN YOU BUY PACKAGING MACHINERY

(Continued)

tles, cans, or jars are common, and liquid fillers are completely contamination-free. In fact, sanitary requirements once met only by food and drugs are now common to industry.

There are several types of liquid fillers: gravity, gravity-vacuum, pressure-gravity, vacuum, pressure vacuum, and volumetric. For larger containers, there are also plunger or piston fillers.

Gravity fillers are usually rotary. They use an overhead storage tank, from which the product flows to the filling valve. They usually use vent tubes to remove air from the containers. This tube is also used to stop product flow, since the liquid can't enter the container if air can't get out.

Gravity-vacuum systems also fill by gravity, but in a closed vacuum system. They establish a vacuum in the container before filling. Their advantage over simple gravity fillers is that this type of machine will not fill a container that's cracked, chipped or damaged in any other way that lets in air. Both gravity and gravity-vacuum fillers fill to a predetermined level that's usually measured from the top of the container. Therefore containers must be accurately made. They are recommended only for small containers, and for free-flowing products or products that tend to separate or come out of emulsion when filled by other methods.

Pressure-gravity fillers are used for liquids that are emulsified and tend to foam or separate, but are too thick for gravity filling. They pump air into the reservoir at about 10 to 20 psi, to help push the product through the filling valve. The more pressure, the faster the flow. But too much pressure is as bad as not enough. It causes foaming and possible overflow.

Vacuum and pressure-vacuum principles use a tank or reservoir located below the containers being filled. Vacuum fillers draw the liquid up by creating a vacuum in the containers. Like gravity fillers, they fill to a level meas-

ured from the top of the container. When the liquid reaches this level it breaks the vacuum, shutting off the flow. Like gravity-vacuum systems, they will not fill any containers that are damaged or leak air. Vacuum fillers can handle liquids as thin as water or as thick as viscous glues. They can be designed to fill from the bottom to reduce foam. They can be built in straight-line or rotary models, for any filling speed. The pressure-vacuum system is similar, with pressure added in the reservoir to boost flow rate for heavy liquids.

Volumetric filling is used most where extreme accuracy is the most important consideration, for very expensive products or where container capacities vary. This type filler uses a tank in which the liquid is held to an exact level. Carefully graduated measuring cylinders are filled with the right amount and deposited it in the container.

There are two types of volumetric fillers: straight-line or in-line, and rotary. Both are piston-type fillers.

Rotary type plunger or piston fillers use gravity or pressure-gravity to get the liquid from reservoir to filling valves. At the filling stations, cylinders above the containers fill with the right amount of liquid, and pistons or plungers then force the liquid into the containers below. At any given time containers are in progressive stages of filling. The closer to the end of the rotating station each container gets, the fuller it becomes. By the time it is completely filled it reaches the end of the rotating line, and is discharged onto conveyors leading to the sealer.

In-line fillers are similar except they don't have the rotating progressive feature. They're extremely versatile, can be used with any liquid or container.

Capping and sealing—Regardless of the type of container, choose the closing equipment as carefully as the filling machine. The most important consideration is closing speed; the machine or machines doing the closing must keep up with filling. This is sometimes hard to accomplish, espe-

ACME

Conveyor Attachments

UNLIMITED
COMBINATIONS
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SAVE

TIME and MONEY



Acme Conveyor Chains and Attachments meet the present day need for greater speed and durability on your automatic machines — they offer smoother running operation that costs less to buy and less to maintain.

Acme Chains always keep their original accuracy and uniformity of pitch because of their high tensile strength and wear resisting properties of the hardened pins and bushings.

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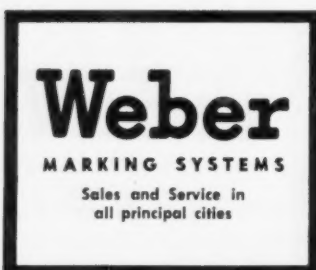


How Weber Address Systems Help Ship "HEET"® 4 Hours After Order is Received

Using "touch-stenciling" and TAB-ON stencils integrated with order processing paperwork, the company now ships faster, more efficiently, saves time and reduces costs

DeMert and Dougherty, manufacturers of famous "HEET" gasoline additive, must schedule their production and shipping lines according to advance predictions of the winter's severity throughout most of the United States and Alaska. Every operation in the company's eleven acre plant at Cicero, Illinois is geared to speed, flexibility, and efficiency. According to the company's time standards, the order processing operation, which includes typing, routing to the traffic department, sending to shipping, addressing and loading is accomplished in less than four hours. A Weber ad-

dressing system helps them accomplish this speed. . . . Weber "Tab-on" stencils are typed over the order invoice papers when the order is received. In the shipping department, the stencil is inserted in a hand-printer and all pieces of the shipment are individually addressed with a clear, sharp, permanent impression. With a smooth, one hand motion, 40 to 50 cartons per minute can be addressed. When all the shipment is addressed, the stencil is thrown away. Filing time and space are saved. For further information on Weber address systems, send the coupon below.



WEBER MARKING SYSTEMS
Div. of Weber Addressing
Machine Co., Inc., Dept. 18-B
Weber Industrial Park,
Mount Prospect, Illinois

Send me your bulletin on "Assembly Line" Addressing Systems.

Company _____
Individual _____
Position _____
Address _____
City _____ Zone _____ State _____



WHAT YOU SHOULD KNOW WHEN YOU BUY PACKAGING MACHINERY

(Continued)

cially for threaded caps.

When buying a capping machine you also have to take into consideration the shape, size and height of container, amount of removal torque required, nature of the product, etc.

For short runs of various size containers, straight line machines are most common. For longer runs of fewer sizes, the rotary is a better bet.

Unloaders and unscramblers:

The weakest point in most packaging lines is the beginning, where product and containers are fed into the line. But with the proper use of unloaders, unscramblers, and/or accumulators, you can achieve the same speed and economy here as in the rest of the line. Unloading the containers from the shipping carton is too often done manually. This creates one of two problems: either the rate of unloading is prohibitively slow, or several workers have to do the job, causing labor costs to skyrocket. Automatic unloaders and unscramblers would be a big help here.

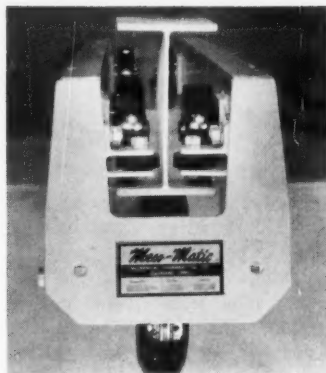
For their cooperation in this article MHE thanks the following companies: A-B-C Packing Machine Corp.; Bartelt Engineering Co.; Battle Creek Packaging Machines, Inc.; Bemis Bro. Bag Co.; Brown Filling Machine Co., Inc.; Conapac Corp.; Crompton & Knowles Packaging Corp.; Economic Machinery Co.; J. L. Ferguson Co.; FMC Packaging Machinery Div., Hudson-Sharp Machine Co.; Hope Machine Co.; R. A. Jones & Co., Inc.; Lakso Co., Inc.; Lynch Corp.; Midnight Engineering Co.; New Jersey Machine Corp.; Potdevin Machine Co.; Saga Packaging Machinery Div., A&M Tool & Die Co., Inc.; Schooler Mfg. Co.; Standard-Knapp Div., Emhart Mfg. Co.; and Triangle Package Machinery Co.

Credit Where It's Due

A belt conveyor blueprint was used on the December cover of MATERIAL HANDLING ENGINEERING to mark the start of MHE's comprehensive Conveyor Series. The editors inadvertently did not mention that the drawing from which the blueprint was made was supplied by the E. W. Buschman Co.

Our thanks for their help.

One Crane Serves All Runway Sizes



A "MECO-MATIC" underhung crane that will operate on hardened Monorail tracks, wide flange beams, and on structural I-beams has been developed by Mechanical Equipment Co., Inc.

It will work on more than 20 sizes of runway beams without adjustment or change in the basic end truck. In addition to this flexibility, the same unit is used for push type, hand geared and motor driven cranes.

Operating the Series "1335" crane as stated, is possible because of the unique wheel design and side guide roller arrangement. Wheels are made of steel, with induction hardened treads developing hardness of 450-500.

Contour of the wheel tread is a special double radius that provides a crowned wheel. They run on all Monorail tracks where the width is at least 4"; on all wide flange sizes where the width of the flange does not exceed 6 1/2"; and on all I-beam sizes from 8" to 15".

Elimination of wheel flanges gives free floating with no binding action. A friction tire drive with the tire bearing against the bottom of the runway beam is used to propel the crane. This is the basis for using the same unit for all runways.

Circle 200 on Reader Service Card

FEBRUARY, 1959



Menasha Container of California Saves \$10,000 yearly with high speed strapping!

FULLY AUTOMATIC strapping of K. D. Cartons is a practical reality. At Menasha Container of California, Division of Menasha Wooden Ware Corporation, for example, an A. J. Gerrard Automatic Round Steel Strapping Machine has speeded operations, eliminated bottlenecks . . . is saving the company approximately \$10,000 annually in manpower alone.

WORTH INVESTIGATING. Fully automatic equipment could offer you similar savings. Or possibly, by merely utilizing our newest strapping materials (and your present methods of application) you could cut your strapping costs as much as 50-80%. In any case, we offer you unbiased counsel with no obligation. Use the coupon below or the reader service card for details.

MODEL 3001 & 3002 PRODUCT FEATURES

- Fully automatic.
- Up to 26 ties per minute.
- Package size capacity—Min. 2" H x 8" W. Max. Widest 27 1/2" H x 43" W. Max. Highest 33" H x 34."
- Top and side compression of packages.
- Two machines can be operated in tandem. Dual ties 13 1/2" or more centers.
- Rugged, durable construction for low maintenance.
- Mobile. Mounted on casters for easy movement.



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A.J. GERRARD AND COMPANY

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**New low cost
VERSATILITY!**

**"Weld-Bilt"
PRODUCTS**

**HINGED
VERTI-LIFT**



- Take it through Doorways
- Move it onto Elevators
- Folded — Lifts 55" from floor
- Extended — Lifts 90" from floor

HY-BOY MODEL "90" is today's handiest, most convenient and versatile low cost portable elevator — for all those many jobs not economical for expensive power equipment.

OFFERS TWO LIFTING RANGES IN ONE UNIT: To lift or stack up to 90", simply swing up the hinged extension; it automatically locks into place. For moving through doors or under any low clearance, just trip the catch lever and fold down the tower extension. For up to 55" lift from floor no need to raise extension.

Special stops prevent over-travel at either height.

ALSO AVAILABLE

A straddle type hinged VERTI-LIFT for handling pallets or drums. For higher lifts with special models contact us with your problem.

HY-BOY FEATURES —

- Powered by 12-volt heavy-duty battery
- Built-in safety valve, recharger, ammeter and indicator light
- Unitized Electro-Hydraulic Pump, and Heavy-Duty, Chrome-plated Ram
- 1500 Pound Capacity at 13" load center
- Push Button Controls
- Special Accessories for Special Tasks

**NOW . . . Get your copy of
new CM558 HY-BOY Catalog!**

WEST BEND EQUIPMENT CORP.

335 River Road, West Bend, Wisconsin

Materials Handling Engineers since 1932

Circle 118 on Reader Service Card

CATALOGS and BULLETINS

offered in advertisements in this publication

Surface Speed Indicators . . . measure feet and yards per minute. Wheel rides on work and transmits rate of speed to dial readings in F. P. M., Y. P. M. or R. P. M. Catalog 146 from Jones Motorola Corp. gives full details.

Circle 71 on Reader Service Card

Automatic Stenciling Cuts Shipping Costs . . . This stencil cutter has an automatic character, word and line spacer. It has a cushioned hand wheel and handle. Some machines have been in use for over 20 years. Ideal Stencil Machine Co.

Circle 68 on Reader Service Card

Dual-Duty Two Speed Hoist . . . furnish the perfect, steady speed combination needed for gentle, accurate spotting of dies, cores, patterns and other delicate loads; and they also give you the fast action lifting needed for high speed production work. Capacities from 1/2 to 10 tons. Robbins & Myers, Inc., Hoist & Crane Div.

Circle 100 on Reader Service Card

You Can Assemble Your Own Conveyor . . . Trough conveyors, belt conveyors, table top chain conveyors and portable loaders are discussed in literature available from Conveyor Specialty Co., Inc.

Circle 36 on Reader Service Card

If You're Interested in Stapling . . . corrugated board, cartons, fabric, leather, plastic bags, wood, roofing, rubber or light metals you'll want to read the bulletins on ways to cut costs by stapling available from Bost-itch.

Circle 26 on Reader Service Card

A Complete Strapping Service . . . Strapping, tools, and

technical assistance are available now from 19 service centers of U. S. Steel Supply Division. Round or heavy-duty flat strapping are available.

Circle 57 on Reader Service Card

A Sample Kit . . . which contains details and samples of Thilco "Black Magic" protective papers is yours for the asking from Thilmany Pulp & Paper Co. This paper protects against sunlight, high humidity, water and water vapor, grease and oils, acids, alkalis and alcohol.

Circle 114 on Reader Service Card

Underhung Cranes . . . with forged alloy steel wheels, gears and pinions to make them virtually maintenance free are described in a bulletin from Abell-Howe Co.

Circle 19 on Reader Service Card

Push-Button Strapping Machine . . . compresses, tensions, cuts and seals one, two or three straps simultaneously. Each strap is applied with a uniform, pre-determined tension. Acme Steel Products Div., Acme Steel Co.

Circle 3 on Reader Service Card

A New Engineering Section . . . in their 100-page catalog, shows 36 methods of conveyor chain adjustment. It's available from Acme Chain Corp.

Circle 1 on Reader Service Card

Cranes Up to 40 Ton Capacity . . . either crawler or mobile type, gasoline or Diesel are described in literature from Unit Crane and Shovel Corp.

Circle 116 on Reader Service Card

Does the Work of Several Trucks . . . The Dempster-Dinosaur is a system that employs giant containers up to 40 cubic yards and larger to handle bulk material, liquids, waste or finished pro-

ducts. One truck and driver can automatically handle a number of containers. A free booklet is available from Dempster Brothers, Inc.

Circle 40 on Reader Service Card

Want to Cut Labor Costs by 22%?... A catalog from W. C. Dillon & Co., Inc. tells how. It also shows prices and capacities of their scales.

Circle 43 on Reader Service Card

Stop Oil Drip in Oven Heat... Use of high temperature Dow Corning silicone greases in ovens reduces rejects and ends waste by protecting product finishes.

Circle 45 on Reader Service Card

Assembly Line Addressing Systems... is the subject of a bulletin from Weber Marking System, Div. of Weber Addressing Machine Co., Inc.

Circle 139 on Reader Service Card

Label Gluers... for glueing labels to cans, bottles, and cartons are described in literature from Glue-Fast Equipment Co., Inc.

Circle 63 on Reader Service Card

Folding Loading Dock Covers... made of heavy flame and water-resistant canvas or rubberized nylon. Sturdy frames and hardware. Scissors type arms permit retraction when not in use. A. Mamaux & Son.

Circle 83 on Reader Service Card

Automatic Bag Closer... sews at a rate of 30 feet per minute. After sewing is completed, thread is cut automatically and sewing action stops as conveyor belt continues to move bag. A complete catalog-file on their bag closing equipment is available from Dave Fischbein Co.

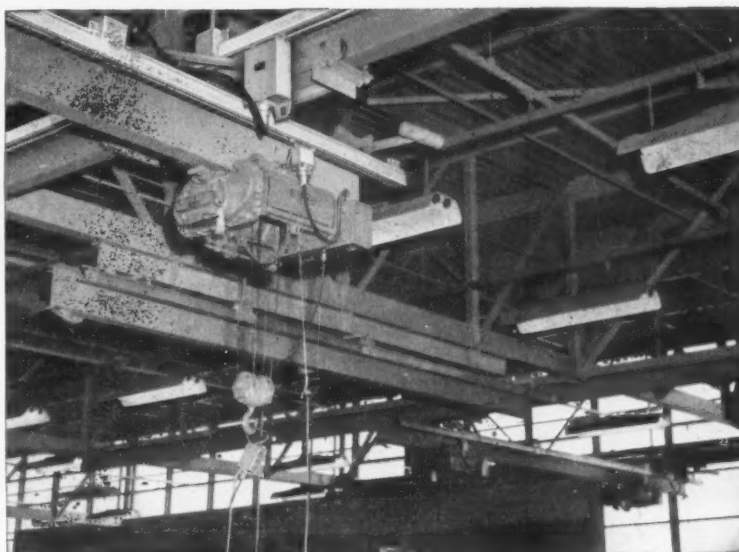
Circle 125 on Reader Service Card

Hydraulic Lift Truck Attachments... such as carton clamps, rotating clamps, side shifters, roll and bale clamps, box dumpers, and gripper arms and forks are all described in literature from Little Giant Products, Inc.

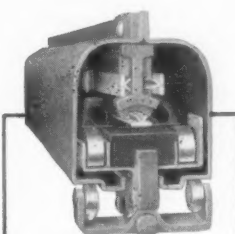
Circle 74 on Reader Service Card
(Continued on page 102)

FEBRUARY, 1959

4 EQUALLY GOOD REASONS



...why your cranes and hoists should be **FEEDRAIL®** powered



Throughout industry, flexible Feedrail systems, in capacities from 60 to 500 amperes, provide convenient movable power sources for:

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- Production Lines
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1. Safe electrification. Feedrail conductors are protectively enclosed in steel — no exposed wiring, no trailing cables. You enjoy maximum protection for personnel and equipment.

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A Feedrail "moving power system" will fit your crane or hoist's needs — can be installed quickly and easily. Get full information. Write today to Dept. F-2.

SOLD BY MORE THAN 1,000 ELECTRICAL DISTRIBUTORS FROM COAST TO COAST
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SPECIALLY QUALIFIED REPRESENTATIVES IN PRINCIPAL CITIES
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The mammoth Johnson and Johnson shipping center at North Brunswick, N. J. uses Multistamp Hand Stamp Stencil Duplicator for all carton addressing... up to 18,000 daily.



Printing both lot labeling form and fill-in data on FORM-CUT stencil is a quick clean, easy, one-man . . . ONE-HAND operation using the Multistamp® duplicator.



Duplicate-address 1000 or more cartons from one low-cost stencil. "Ship To" frame pre-printed by carton maker saves cost of labels and of pasting labels to cartons.

ONE-DAY SERVICE on repeat orders of FORM-CUT STENCILS . . less than 10 days on new orders.

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SHIPPING DEPARTMENT

**SPEED!
ECONOMY!
ACCURACY!**

Get All 3 with

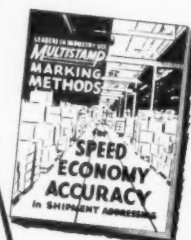
MULTISTAMP®
STENCIL DUPLICATOR

**STENCIL
ADDRESSING
SYSTEM**

Shipping department addressing errors are virtually eliminated when address and routing information are printed directly on cartons by the Multistamp Stencil Duplicator. The print becomes an identical . . . permanent part of every carton. Follow-smear-proof . . . fade-proof . . . water-proof . . . permanent part of every carton. Following simplified Multistamp marking methods, the address stencil is cut in the same typing which fills out shipping order, bill of lading, invoice, and other forms. One typing—one easy operation.



MULTISTAMP Stencils Have Tough Backing Board Frames
Stencil is held firmly in place while printing 1000 or more accurate, clean, clear impressions.



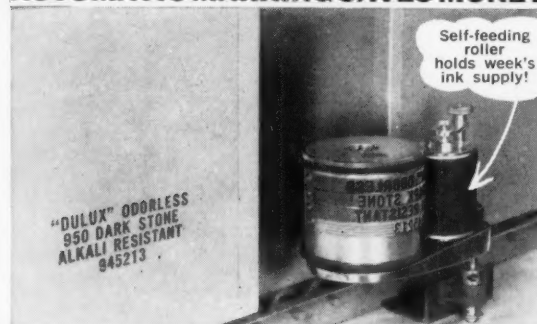
WRITE FOR VOLUME PRICE LIST ON REGULAR AND FORM-CUT STENCILS . . . AND YOUR FREE COPY OF OUR NEW HOW-TO (AND WHY) BOOK ABOUT THE MULTISTAMP MARKING METHODS.

MULTISTAMP®
STENCIL DUPLICATOR
THE MULTISTAMP CO. NORFOLK, VA.

MATERIAL HANDLING ENGINEERING

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AUTOMATIC MARKING SAVES MONEY



New ROLACODER conveyor and case-sealer attachment marks boxes, cartons, drums, filled bags automatically

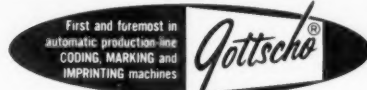
Saves on container printing costs... eliminates hand-stamping... insures faster identification

- Low-cost... pays for itself in months
- Compact... works by friction... requires no troublesome adjustments
- Install it yourself on any conveyor, case-sealer, etc. to mark from side or top
- Not a gadget — beautifully designed and precision-made to give consistently dependable performance, uniform impressions
- Patented type base holds type and dies securely, makes copy changing easy
- Spots imprints accurately in any desired location
- Many thousands in use by all industries

Models to suit every need... including twin-action units for marking 2 or 4 sides of cases simultaneously.

Write today for Bulletin "ROL-3"

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In Canada: Richardson Agencies, Ltd. • Toronto & Montreal

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COMPLETE DOCK PROTECTION IN SECONDS — ONE MAN OPERATION



Just think... in seconds you can give trucks at your dock complete protection on the coldest days... save personnel from winter colds and accidents... protect products from weather damage and freezing. Rugged, heavy duty, spring-loaded steel frame needs no maintenance... UL approved fabrics are fire, water, mildew-resistant.

WRITE for complete details and prices.



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SUPPLEMENTARY READER SERVICE CARD

Many readers have reported that their copy of **Material Handling Engineering** sometimes arrives without the Reader Service Card. This may be caused by others in the plant who see the magazine first, tear out and use the card and pass the magazine on. If this copy reaches you without a Reader Service Card, use this supplementary coupon to obtain additional information from the manufacturer on any advertisements, new equipment, useful literature, etc. **CAUTION:** This must be mailed first class in a sealed envelope.

PLEASE PRINT

February 1959. Do not use after 5-15-59

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Company..... Kind of Business.....

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City..... Zone..... State.....

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| 2 | 27 | 52 | 77 | 102 | 127 | 152 | 177 | 202 | 227 | 252 | 277 | 302 | 327 | 352 | 377 | 402 | 427 | 452 | 477 |
| 3 | 28 | 53 | 78 | 103 | 128 | 153 | 178 | 203 | 228 | 253 | 278 | 303 | 328 | 353 | 378 | 403 | 428 | 453 | 478 |
| 4 | 29 | 54 | 79 | 104 | 129 | 154 | 179 | 204 | 229 | 254 | 279 | 304 | 329 | 354 | 379 | 404 | 429 | 454 | 479 |
| 5 | 30 | 55 | 80 | 105 | 130 | 155 | 180 | 205 | 230 | 255 | 280 | 305 | 330 | 355 | 380 | 405 | 430 | 455 | 480 |
| 6 | 31 | 56 | 81 | 106 | 131 | 156 | 181 | 206 | 231 | 256 | 281 | 306 | 331 | 356 | 381 | 406 | 431 | 456 | 481 |
| 7 | 32 | 57 | 82 | 107 | 132 | 157 | 182 | 207 | 232 | 257 | 282 | 307 | 332 | 357 | 382 | 407 | 432 | 457 | 482 |
| 8 | 33 | 58 | 83 | 108 | 133 | 158 | 183 | 208 | 233 | 258 | 283 | 308 | 333 | 358 | 383 | 408 | 433 | 458 | 483 |
| 9 | 34 | 59 | 84 | 109 | 134 | 159 | 184 | 209 | 234 | 259 | 284 | 309 | 334 | 359 | 384 | 409 | 434 | 459 | 484 |
| 10 | 35 | 60 | 85 | 110 | 135 | 160 | 185 | 210 | 235 | 260 | 285 | 310 | 335 | 360 | 385 | 410 | 435 | 460 | 485 |
| 11 | 36 | 61 | 86 | 111 | 136 | 161 | 186 | 211 | 236 | 261 | 286 | 311 | 336 | 361 | 386 | 411 | 436 | 461 | 486 |
| 12 | 37 | 62 | 87 | 112 | 137 | 162 | 187 | 212 | 237 | 262 | 287 | 312 | 337 | 362 | 387 | 412 | 437 | 462 | 487 |
| 13 | 38 | 63 | 88 | 113 | 138 | 163 | 188 | 213 | 238 | 263 | 288 | 313 | 338 | 363 | 388 | 413 | 438 | 463 | 488 |
| 14 | 39 | 64 | 89 | 114 | 139 | 164 | 189 | 214 | 239 | 264 | 289 | 314 | 339 | 364 | 389 | 414 | 439 | 464 | 489 |
| 15 | 40 | 65 | 90 | 115 | 140 | 165 | 190 | 215 | 240 | 265 | 290 | 315 | 340 | 365 | 390 | 415 | 440 | 465 | 490 |
| 16 | 41 | 66 | 91 | 116 | 141 | 166 | 191 | 216 | 241 | 266 | 291 | 316 | 341 | 366 | 391 | 416 | 441 | 466 | 491 |
| 17 | 42 | 67 | 92 | 117 | 142 | 167 | 192 | 217 | 242 | 267 | 292 | 317 | 342 | 367 | 392 | 417 | 442 | 467 | 492 |
| 18 | 43 | 68 | 93 | 118 | 143 | 168 | 193 | 218 | 243 | 268 | 293 | 318 | 343 | 368 | 393 | 418 | 443 | 468 | 493 |
| 19 | 44 | 69 | 94 | 119 | 144 | 169 | 194 | 219 | 244 | 269 | 294 | 319 | 344 | 369 | 394 | 419 | 444 | 469 | 494 |
| 20 | 45 | 70 | 95 | 120 | 145 | 170 | 195 | 220 | 245 | 270 | 295 | 320 | 345 | 370 | 395 | 420 | 445 | 470 | 495 |
| 21 | 46 | 71 | 96 | 121 | 146 | 171 | 196 | 221 | 246 | 271 | 296 | 321 | 346 | 371 | 396 | 421 | 446 | 471 | 496 |
| 22 | 47 | 72 | 97 | 122 | 147 | 172 | 197 | 222 | 247 | 272 | 297 | 322 | 347 | 372 | 397 | 422 | 447 | 472 | 497 |
| 23 | 48 | 73 | 98 | 123 | 148 | 173 | 198 | 223 | 248 | 273 | 298 | 323 | 348 | 373 | 398 | 423 | 448 | 473 | 498 |
| 24 | 49 | 74 | 99 | 124 | 149 | 174 | 199 | 224 | 249 | 274 | 299 | 324 | 349 | 374 | 399 | 424 | 449 | 474 | 499 |
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FEBRUARY, 1959

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— AND BIG!

MARSH STENCILS

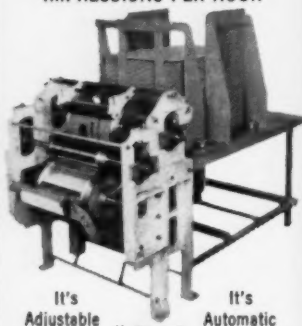
MARSH STENCIL MACHINE CO.
67 Marsh Bldg. • Belleville, Illinois

Circle 79 on Reader Service Card

Marsh Stencils assure safer, faster shipping.

Write us for free booklet C-58.

INPLANT PRINTS UP TO 3000
IMPRESSIONS PER HOUR



It's Adjustable #7 INDUSTRIAL'S AUTOPRINTER! It's Automatic

For production line marking, dating and coding of multiwall bags, cartons and bulk containers.

When dependable output must be coupled with flexibility and rapid changeover, it's a perfect job for Industrial's Autoprinter.

Completely automatic and electronically controlled, the Autoprinter works right with your production line ... at speeds up to 3,000 neat, legible impressions per hour regardless of surface variation! Saves inventory, pre-printing, storage costs. Uses interchangeable rubber type, requires minimum of attention. The Autoprinter has been engineered and built for effective performance ... and with proper care, will give you a lifetime of service.

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The WHIPPET Marker — for automatic low cost conveyor line marking.

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— for automatically marking any material that takes hot dye transfer impressions.

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CATALOGS & BULLETINS

(Continued from page 99)

Now You Can Lease a Power Sweeper... Enjoy all the benefits of mechanized housekeeping without the capital investment. Sweeps in excess of 100,000 square feet per hour. No dust bags to empty. Quick broom changes. Vacuum cleaning attachments. Complete information is available from Wayne Mfg. Co.

Circle 137 on Reader Service Card

Steel Dock Plate... The Rollway gives you the advantage of heavy, rugged steel construction plus the exclusive feature that enables one man to easily roll it in and out of position in seconds. Wheels fold out of the way when not in use. Woodford Mfg. Co.

Circle 120 on Reader Service Card

Flow Charts Are Easy to Make... with the Chart-Pak pressure-sensitive circles, rectangles and tapes. These are special pre-printed flow chart symbols available in squares, circles, triangles arrows and other standard symbols. Can be easily lifted and reapplied for corrections.

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Aluminum Hand Truck...

Has a 600 pound capacity, can't rust and is available in 169 different models. Non-cast nose plate is guaranteed not to break. F. H. Langsenkamp Co.

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Exhaust Purifiers... make air safe, clean and healthful. Installed on material handling equipment and other indoor engines, they change dangerous exhaust fumes to harmless vapor. Available for gas, LP-Gas or diesel engines. Oxy-Catalyst, Inc.

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Vertical Speed Reducers...

Designed for conveyor applications requiring a vertical output shaft and extended bearing housing for high overhung load. Available in six sizes. Ratios up to 1800:1. Bulletin 57-1; Anchor Steel & Conveyor Co.

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IN CHILLY
BLASTS...



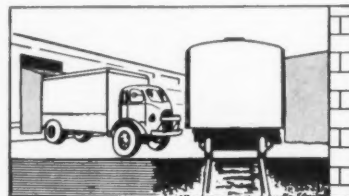
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RAIN...



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There's a big difference... in fuel costs... in employee morale... in productivity of workers... in absenteeism due to colds or accidents... in protection of merchandise.

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DAZZO PRODUCTS, INC.

152 Bleecker Street, New York 12, N. Y.

ORegon 3-5298

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MATERIAL HANDLING ENGINEERING

SELLING DRIVER TRAINING . . .

(Continued from page 63)

We have better lift truck drivers now. Before the course, 106 men took a test and scored an average of 67 percent. After training they scored an average of 89 percent on the same test. Individuals improved as much as 46 percent. We think it's significant that long-service drivers (6 years or more) showed an average 28-percent improvement.

Our driver training course has had some other far-reaching effects:

1. *Better cooperation between the men and management.* The responsibilities of both had been better defined in the course, resulting in better understanding of each other's problems.

2. *A strict policy that only qualified drivers will operate our trucks from now on.*

3. *Improved attitudes.* The men got into the habit of doing things the right way; this attitude gives them more interest and pride in their work.

4. *Better supervision.* We held a 2-day course for the drivers' immediate supervisors. It was exactly the same except that the practical driving and examinations were omitted. This course has improved understanding between the drivers and their supervisors, made it easier to enforce rules.

5. *Better cooperation of the maintenance department.* The drivers' greater interest in their trucks has made the mechanics more interested in maintaining them. The daily inspection report helps the mechanics spot trouble before it becomes serious.

Apologies . . .

. . . to L. F. Heckmann, whose selection as vice chairman of the Corrugated Metal Product Section of the Material Handling Institute was reported in our January issue. His company connection should have been listed as general sales manager of The Union Metal Manufacturing Co., instead of Union Steel Products Co.

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COLLAPSIBLE
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PALLET BOXES
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MODEL B



MODEL C



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FOR UNGUMMED LABELS TO
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Fast! Efficient! Economical!

10 DAY FREE TRIAL!
Write today on your letter-head. No salesman will call. We will ship Glue-Fast machine and glue without obligation.

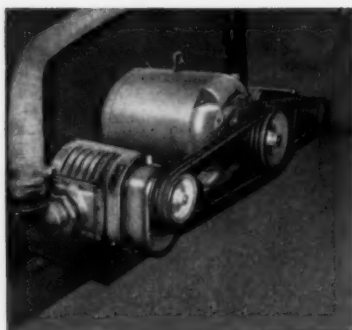
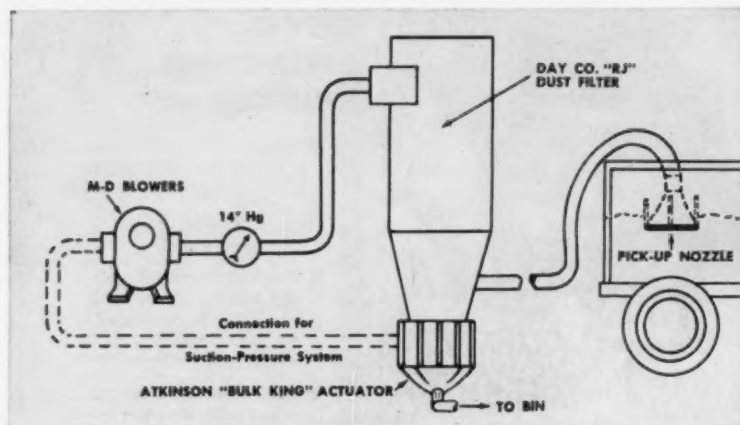
Glue-Fast Equipment Company, Inc.
9-Y White Street, New York 13, N. Y.

Circle 63 on Reader Service Card

NEW VACUUM METHOD

Using M-D 3-Lobe Blowers

Unloads 1,200 Bu. of Wheat Per Hour



Two Model 5511 M-D Blowers operating in parallel furnish 1,600 scfm, 14" Hg continuous vacuum

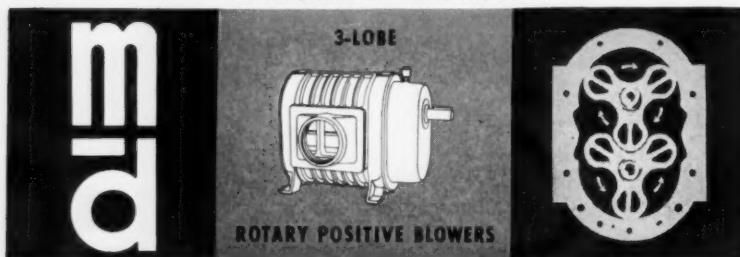
This system can easily be converted to a suction pressure system for handling flour, or granular material, by connecting the outlet side of the M-D Blowers to the rotary feeder valve, as indicated by the dotted line in the diagram above. A typical installation using two-stage M-D High-Pressure 3-Lobe Blowers, Models 5509 and 5507.5, can handle 1,700 pounds of flour per minute from trailer to storage bin. Ask about other applications of low-cost, high pressure M-D Blowers!

Atkinson Milling Co., Minneapolis, unloads 1,200 bushels of wheat per hour (that's 72,000 pounds!) from standard trailers with a new vacuum method using M-D 3-Lobe High Pressure Rotary Positive Blowers. The diagram shows the simplicity of the new system employing an Atkinson "Bulk King" Actuator, a Day Co. "R.J." Dust Filter and two M-D Blowers operating in parallel. Economies are: Only one operator needed . . . low installation cost—far less than for system of lifting and dumping trailer . . . lower shipping costs . . . elimination of dust and infestation.



Specially designed suction nozzle enables one man to unload 40 foot trailer of wheat in 35 minutes

WRITE FOR NEW FOLDER GIVING PERFORMANCE DATA
M-D BLOWERS, INC. • 100 FOURTH STREET • RACINE, WIS. • MEIrose 4-5521
A Subsidiary of Miehl-Goss-Dexter, Incorporated



Circle 81 on Reader Service Card for more information

SELECTION AND USE OF OVERHEAD CONVEYORS . . .

(Continued from page 69)

used for turns of 90 degrees or less, particularly for the smaller radiuses. Traction turns are used where turns are exposed to heat and in inaccessible locations.

Drives

There are two main types of drives: the caterpillar, which can be located anywhere along a straight run of the conveyor, and the sprocket, which must be located at a turn of at least 90 degrees. Caterpillar drives are used where all horizontal turns (due to clearance or other requirements) must be of long radius. Floating caterpillar drives are one of several methods used to minimize downtime caused by over-loading the drive. Both constant and variable speed drives are available.

On some conveyors, the length, the load, or a combination of the two will result in a chain pull greater than the capacity of the chain and drives usually furnished. You can solve this problem by using two or more identical drives accurately synchronized. Floating caterpillar drives or overload cut-outs are recommended to prevent all the shear pins from breaking in the event of an overload on one drive.

Takeups

Nearly all conveyors need takeups to keep the chain correctly adjusted and take up the slack. Occasionally, where a conveyor has a sharp downrun directly following the drive unit, you won't need a takeup because the down run will take the chain slack away from the drive.

Takeups are 180 degree turns with telescopic rails. The simplest is the hand screw type. Automatic types include the spring (most common), the counterweighted, and air cylinder types. If the conveyor passes through an oven, you must have a takeup, preferably an automatic one. Multiple drive conveyors usually need a takeup for each drive. However, constant speed drives using high slip motors need only one takeup. And floating caterpillar drives (variable speed types) can also be arranged for only one takeup.

takeup should be as close as possible to the drive on the down-strand (slack) side. On multiplane conveyors, it's best to put the drive ahead of a downhill curve and the takeup after the curve.

Trolley Chain

You can assemble and disassemble chain without tools. There are two styles of chain: an X prefix designates the new chain which is stronger because of a stronger web in the side link. On 3 inch I-beams you can use 348 or X348 chain. Trolleys can be on 6 inch centers or any multiple of 6 inches, but spacing greater than 36 inches is not recommended as chain sag may become great enough to cause trouble at turns or cause chain whip. On 4 inch I-beams you can use 458, X458, 468 and 658 chain. With 458, X458 and 468 chain you can space trolleys on 8-inch centers or any multiple of 8 inches. The 468 chain is a stronger chain used where individual loads are within the rating of a 4 inch trolley and the conveyor is very long or for some other reason has an exceptionally heavy chain pull. Adapters are needed to use this chain. The 658 chain has exactly the same strength as 458 chain. On it trolleys can be spaced at 12 inch centers (or multiples of 12 inches)—it is used in installations where trolleys spaced on multiples of 8 inches do not work out well. On 6-inch beams you can use 678, X678, or X458 chain. The 678 and X678 chains move trolleys spaced on multiples of 12 inches. The X458 chain is used with a special 6 inch trolley where loads are heavy but the chain pull is low (usually conveyors with short, simple paths.)

Where very abrupt bends are required, universal link or knuckle joint attachments can be used. They are particularly useful where a conveyor must have a vertical run with sharp turns at the top or bottom.

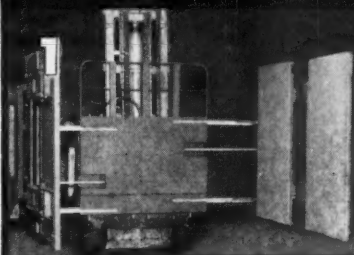
Attachments

You can increase the versatility of your overhead system by proper selection of attachments. Here's a listing of the ones used with trolleys and their uses:

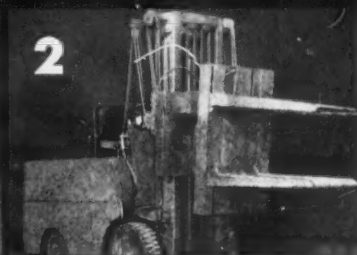
B (threaded stud) — generally

Little Giant hydraulic LIFT TRUCK ATTACHMENTS*

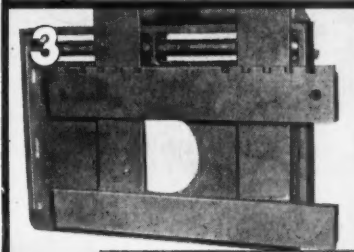
Make your Lift Trucks do double duty . . .



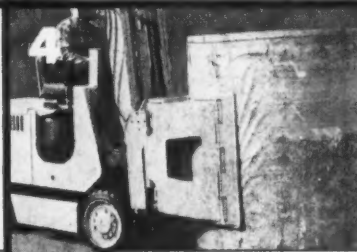
UNIVERSAL CARTON CLAMPS



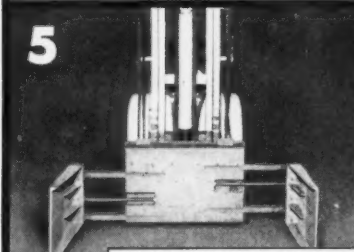
UNIVERSAL ROTATING CLAMPS



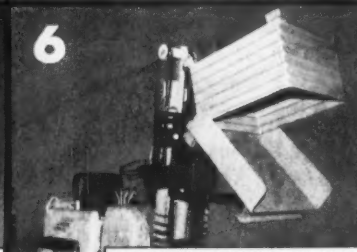
UNIVERSAL SIDE SHIFTERS



UNIVERSAL ROLL CLAMPS



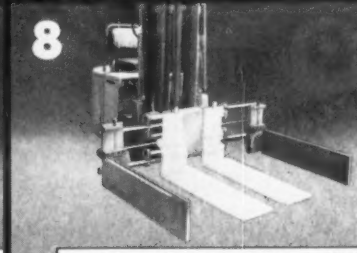
UNIVERSAL BALE CLAMPS



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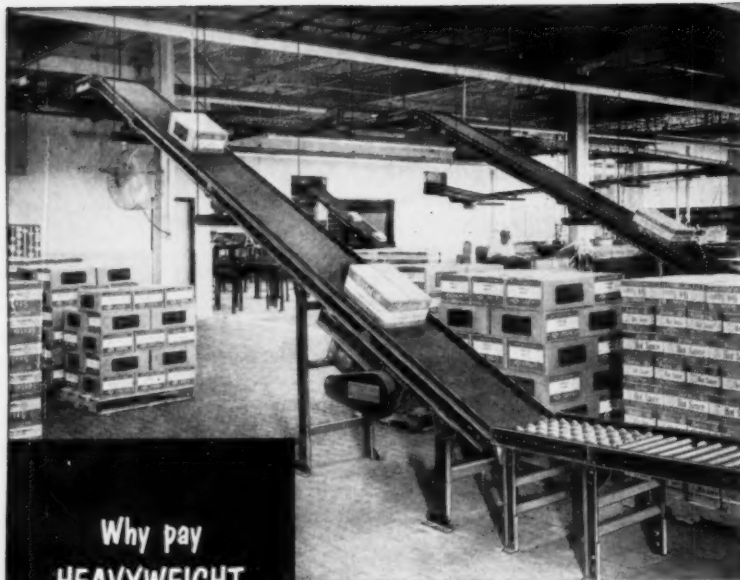
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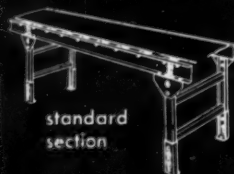


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Minimize your equipment outlay! You get the most economical belt conveyor... Horizontal, Inclined or Elevated... when you use Buschman designed components customized to your particular needs.

Save valuable floor space! Trouble-free design cuts your maintenance costs—saves floor space—enables you to "center" conveyor drives or locate them optionally at either end. Adjustable end pulleys permit easy belt tracking with minimum adjustment.

Integrate your conveyor operations! Lightweight Buschman L.M. Belt Conveyors—portable and stationary—enable you to incorporate automatic controls for highest efficiency in minimum space.

Submit your problem. We will solve it.

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C343-EWB

SELECTION AND USE OF OVERHEAD CONVEYORS...

(Continued)

used when trolleys are paired up with a load bar to carry heavy loads. It is also used in other cases where a threaded stud is needed, as for swivel hooks.

C—usually used with simple J hooks on which material is hung. D—fits into the slot of an H attachment (see below) and is used to attach hangers made of pipe. The pipe slides over the lower part of the D attachment and is pinned through a hole.

E—is used for load bars when trolleys move at angles up to 60 degrees.

H—is the most popular. It is used with almost any type of hook, tray, or rack.

I—is an idler used for intermediate trolleys which carry no load. They are often needed to avoid excessive chain sag when live trolleys must be widely spaced to carry bulky loads.

J—is used when the product being conveyed must be rotated without being removed from the conveyor. P—is used where special fixtures must be used as carriers.

Many types of chain pins and intermediate chain attachments are available. With them you can suspend light loads in the space between trolleys. But make sure the loads are not great enough to cause excessive chain sag between the trolleys.

(Continued next month)

Photographs and information courtesy of The Alvey-Ferguson Co.; Conveyor Division, The American MonoRail Co.; Anchor Steel and Conveyor Co.; Becker Crane & Conveyor Co.; Chainveyor Corp.; Logan Corp.; Lamson Corp.; Link-Belt Co.; Mechanical Handling Systems Inc.; Richards-Wilcox Manufacturing Co.; Saginaw Products Corp.; Jervis B. Webb Co.; and Conveyor Equipment Manufacturers Association.

Portable Elevator Guide

A 20-page booklet, "The Portable Elevator for Vertical Material Handling," describes this device's advantages and applications. This reference guide is available without cost from the Association of Lift Truck and Portable Elevator Manufacturers, One Gateway Center, Pittsburgh 22, Pa.

Circle 21 on Reader Service Card for more information

CONVERSION TO DIESEL...

(Continued from page 73)

rier and has performed satisfactorily for 394 hours, to date.

Engine in No. 3 Straddle Carrier — installed 2/10/56. After 10,688 hours of service, the engine became difficult to start. We found that it was throwing water out of the exhaust pipe and had water in two cylinders (No. 5 & 6). Other cylinders were dry. We disassembled the engine and found the lower combustion liners cracked, cracks in the cylinder head between small 1/4-inch water passage and head stud hole. A water pressure test of the cylinder block revealed no visible leaks. We installed six new exhaust valves and five new intake valves. One intake valve was re-ground. We re-seated the head and reinstalled all six cracked combustion liners. The engine is now back in No. 3 Carrier and has run 467 hours without further repairs.

Engine in No. 14 Straddle Carrier — installed 1/20/58. We removed the engine after 342 hours of service because of a cracked block. It was welded at No. 2 and No. 5 cylinders, then installed in No. 12 Carrier where it has operated satisfactorily for 722 hours.

Temperature Important

Thermostats used in both the 298 cubic-inch and the 404 cubic-inch engines will start to open at 172 degrees in a free water test and will be completely open from 180 to 185 degrees. We have found that engines operate most efficiently in this range.

After temperature, there are other factors which are important to successful Diesel operations. Fuel must be of 50, or higher, cetane rating. Series 3 crankcase oil must be used. Good preventive maintenance must be practiced at all times. Extra large, waste or sock type, oil filters are needed. And, it goes without saying, all engines must be kept clean.

Three machines were not converted to Diesel until the early part of 1958. This provided a standard against which to measure Diesel performance. We have found that the number of operating hours obtained by the expenditure of one mechanic manhour provides a fair and realistic gauge of performance. A comparison of 11 converted engines with 3 unconverted engines showed:

Converted engines — Operated 99,557 hours and 774 mechanic manhours for a ratio of 128 to 1.

Unconverted engines — Operated 25,666 hours and 480 mechanic manhours for a ratio of 53.5 to 1.

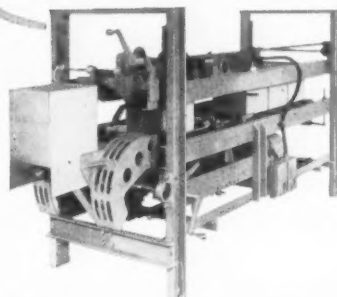
This showed that, in our operations, the old engines required 2.4 times as much mechanical service as the new.

We used to burn 2.46 gallons of fuel per hour. During the test period we used 1.56 gallons per hour in Diesel engines. Downtime was also slashed greatly.

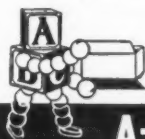
As a result of our conversion to Diesel engines we have concluded that: (1) Diesel power is satisfactory and desirable for mobile material handling equipment in steel mill applications; (2) It may also be desirable for other situations where dependability, long life, and sound engine economics are required.

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A-B-C Junior Case Sealer
- A REAL COST CUTTER!



Brings new efficiency to cramped packaging quarters. Fast, automatic, trouble-free. Carton jamming virtually eliminated. Three semi-automatic models fit most case sizes. Write today for details—floor plans and specs.



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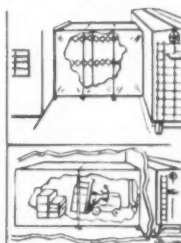
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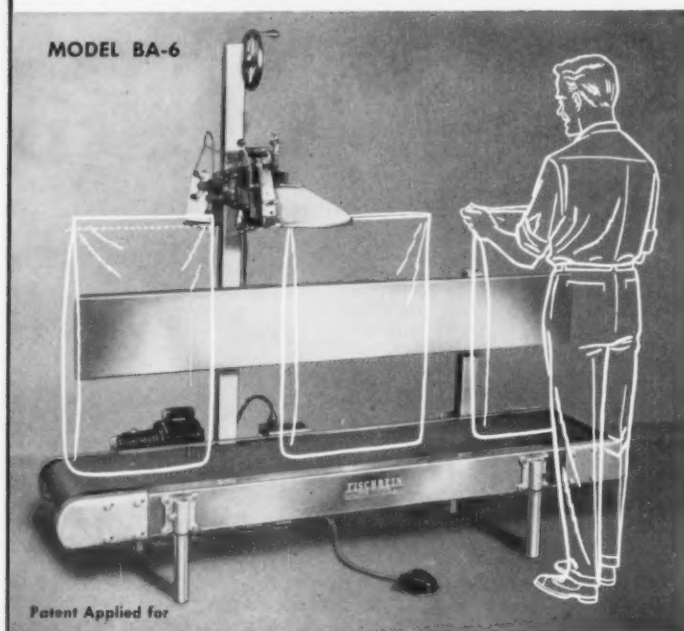
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- Simple mechanical operation... Simple installation.
- Sews at rate of 30 feet per minute.

An automatic closing unit. The bags themselves start the sewing operation when they reach the sewing head. After sewing is completed, thread is cut automatically and sewing action stops as conveyor belt continues to move bag.



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POWERFUL PULL

to open or close any freight car door in 20 seconds or less!



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The Nolan Model H One Man Car Door Opener has been in successful use for many years, by thousands of companies who recognize its exclusive features of speed and safety. This popular tool enables one man to do by himself what formerly required the time and assistance of several men, usually taken off other jobs, to tug and yank while risking mangled hands, strained backs and other serious injuries. With a few quick pulls on the anchor chain as shown here, one man can get the most stubborn door rolling and wide open in a jiffy.

It will keep men working steadily and safely without exposing them to the hazards present when make-shift methods are used to open car doors. Note above how operator is away from the front of the door . . . away from its injurious, killing effects if it should fall!

Order one or more Nolan Model H Car Door Openers Today!

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ON YOUR ADDRESSING COSTS WITH

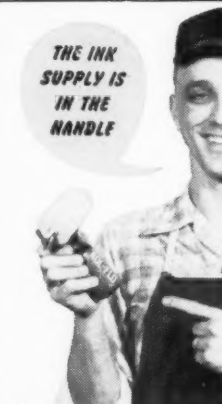
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Circle 42 on Reader Service Card for more information
MATERIAL HANDLING ENGINEERING



NEW EQUIPMENT SECTION

Diesel Lift Truck

A diesel-powered fork lift truck specially engineered to provide extra safety in hazardous locations has been introduced by this company. Designated as the "Safe-guard Diesel Fork Lift Truck" it is available in nine different models with lifting capacities ranging from 3000 to 12,000 pounds. Model 500-PD is shown. The lift truck is completely without electrical components. It is equipped with hydraulic starter, mechanically-operated fuel, temperature and oil pressure gauges and a mechanical warning device. A low volatile fuel is used. The diesel-powered safety unit has a water-cooled exhaust manifold and water muffler. The water muffler has capacity for a normal day's operation.

Towmotor Corp.

Circle 401 on Reader Service Card

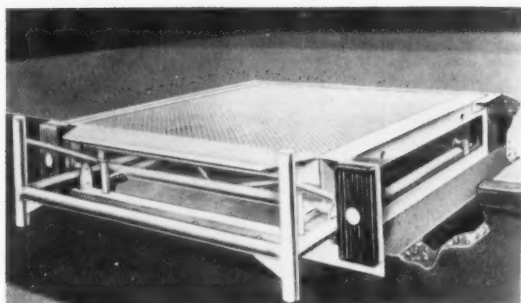


Ramp Equips Docks For High Or Low Bed Trucks

How to bridge the difference between the level of a truck bed and a loading dock while maintaining an easy, practical grade has been answered by this company with its Dockbridge loading ramp. Completely automatic and truck-activated, the unit equips docks to receive high or low bed trucks without loss of dock area. Built like a bridge and hinged at the back, the lip of the ramp rises to a height of 16" above dock level and lowers to 10" below. It is available in three ramp lengths of 6, 8, and 10 feet, and is 6 feet wide.

American Dockbridge, Inc.

Circle 402 on Reader Service Card



Power Drive For Portable Lifts

Certain manually propelled portable lifts can now be moved easier and faster with a new power drive unit according to this manufacturer. The drive is of electro-mechanical design featuring a one horse-power traction motor connected through a centrifugal clutch, chain, and sprockets to a 9" diameter drive wheel. Forward and reverse buttons and mechanical braking action are located in control arm. The brakes are automatically applied when arm is released, providing safe 'dead-man' control. Unit is powered by the 12-volt system of the portable lift. It can be factory or field-installed using existing holes in any Hartman Booster or Oster 1000, 1250, or 2000 pound capacity models.

Hartman Metal Fabricators, Inc.

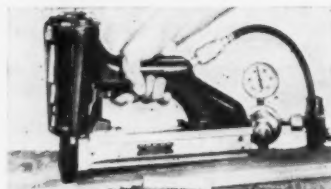
Circle 403 on Reader Service Card



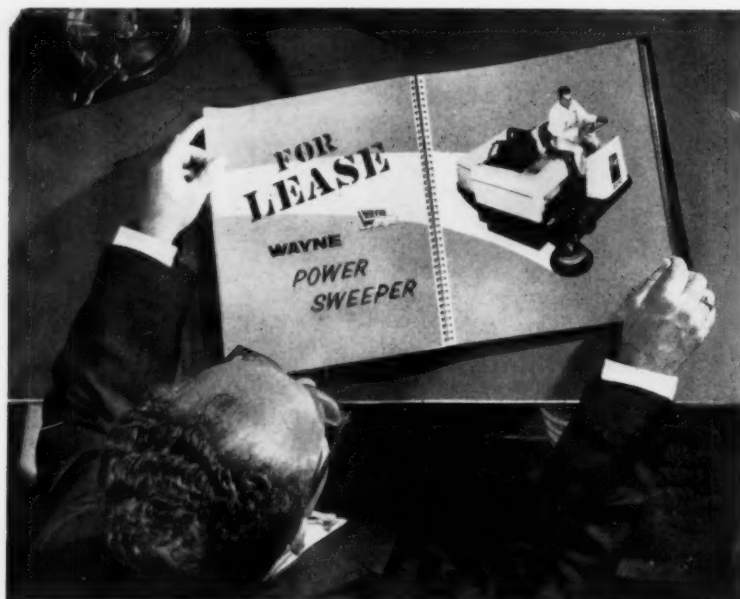
NEW EQUIPMENT SECTION

High Speeds At Low Pressure

It only takes 50 psi of air to drive brads four times faster than by hand with this air-powered woodworking tool. The Duo-Fast Brad Gun has a redesigned air piston that drives 1" and 1 1/4" cohered brads into hard materials without recoil. It's made of magnesium, and weighs only about 5



pounds. It holds 100 brads. A safety yoke prevents firing except into the material being worked on, and also serves as an automatic trip device for rapid-fire operation. *Fastener Corp.*
Circle 404 on Reader Service Card



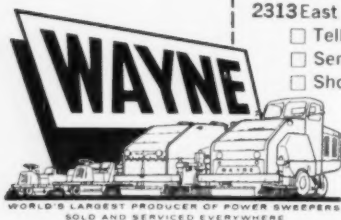
NOW...POWER SWEEPING WITHOUT CAPITAL INVESTMENT

Now...lease a Wayne Power Sweeper...enjoy all the benefits of modern mechanized housekeeping without capital investment. Do away with slow, costly hand sweeping and inefficient, old-fashioned power sweepers. Your monthly lease can run less than \$150, and you'll have your Wayne Power Sweeper paid for—out of savings—at the end of a year! Now...you can't afford not to have Wayne Power Sweeping!

SEND FOR COMPLETE INFORMATION NOW!

FEATURES OF WAYNE POWER SWEEPERS

- Sweep in excess of 100,000 square feet per hour
- No dust bag to empty (dust trapped in filter)
- Power dumping • Largest effective hopper capacity
- Quick broom changes • Vacuum cleaning attachments



Wayne Manufacturing Company

2313 East Lexington Street, Pomona, California

- ☐ Tell me more about the Wayne Lease Plan
- ☐ Send me descriptive literature
- ☐ Show me a Wayne in action

Name _____

Title _____

Firm _____

Address _____

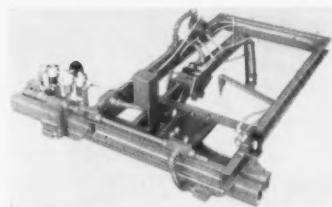
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Export Agent: Henry R. Jahn & Sons, Inc., New York • Canada: Wayne-Crothers, Ltd., Scarborough, Toronto

Circle 137 on Reader Service Card for more information

Overhead Conveyor Systems Featured

Declaring that there's an R-W overhead conveying system that



will efficiently solve your specific materials handling problem, this folder presents a modern way to reduce overhead cost. Presented are the R-W "Twin-Track" overhead automatic dispatch system and the R-W "Zig-Zag" continuous power conveyors.

Richards-Wilcox Mfg. Co.
Materials Handling Division

Circle 405 on Reader Service Card

Installs Without Altering Dock

The 1200 model automatic dock-board just bolts to the top of your dock, needs no expensive dock al-



terations to install. It uses no electrical, or hydraulic power to raise or lower; the power of the truck backing in is all it takes. When the truck moves away it returns to raised position without the aid of an operator. Standard models available in all sizes, capacities.

Kelley Co., Inc.

Circle 406 on Reader Service Card

Hand Pallet Truck

The Portapal is a hydraulic truck available in 2,000, 3,000, and 4,000 pound capacities. And there are three widths and five



standard fork lengths. Wheels can be steel, rubber, Durathane, or Formica. Heavy felt shields are used on the pump and ram cylinders to protect them from dust. The compact hydraulic system has built-in overload valves and 50 mesh oil filter screens. Other features: welded box-girder frame, 220 degree steering, auxiliary lifting rollers for both entry and pull out, deep groove ball bearings on all wheels, and replaceable bushings with grease fittings at all wear points.

Equipment Service, Inc.
Circle 407 on Reader Service Card

Industrial Truck Battery

This battery features a 125 ampere hour positive plate, thus providing a capacity up to 1875 am-



per hours at the 6-hour rate. This extra capacity permits full shift operation of an industrial truck drawing maximum power almost continuously, says the manufacturer.

Bowers Battery & Spark Plug Co.
Circle 408 on Reader Service Card

Vacuum Barrel Handler

A hydraulic motor-driven vacuum pump provides power for this barrel handling attachment. At-



tached to a lift truck, it can lift four 55-gallon steel drums, each weighing 490 pounds. A dashboard control allows the operator to lift or release the barrels together or in any combination.

Vac-U-Lift Co.
Circle 409 on Reader Service Card



United Parcel Service

SORTS them right
MOVES them fast
KEEPS them moving



WITH OLSON CONVEYORS

Dependable, day-in-day-out operation of a conveyor system is essential in saving time and money for most firms. For United Parcel Service in Chicago, a conveyor system is the life-line of its business.

A breakdown could mean serious bottlenecks and costly delays in unloading, sorting and loading of over 75,000 parcels per day in these downtown Chicago headquarters alone.

That's why Olson was selected to build the specialized equipment needed. United Parcel Service knew from experience that Olson could build a dependable conveyor system and that Olson conveyors are meeting the tough schedule of continuous day-in-day-out operation, every week of the year.

Specify

OLSON CONVEYORS

Manufactured by SAMUEL OLSON MFG. CO., INC.
2426 Bloomingdale Avenue Chicago 47, Illinois

DIVISION OF CHERRY-BURRELL CORPORATION

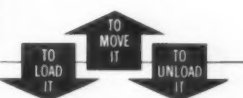
Circle 135 on Reader Service Card for more information



Olson
TELESCONVEYOR
SPEEDS LOADING
AND UNLOADING

These special conveyors extend into the bodies of transfer vehicles from the platform and are retractable as the vehicle is loaded or can be moved forward as the vehicle is unloaded.

Write for
Latest Bulletins on
Olson Time Saving,
Money Making
Conveyors



NEW EQUIPMENT SECTION

Rough Terrain Fork Trucks

Two Ranger fork trucks of 4000 and 6,000 lb. capacity provide all-weather handling around build-



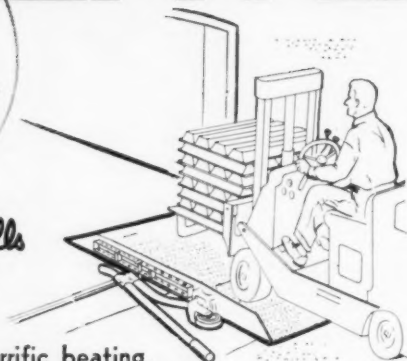
ing sites, orchards, lumber mills and similar rugged locations. Both are equipped with two-wheel and four-wheel drive and have an oscillating rear axle which permits the machines to travel over rutted, bumpy ground and still maintain traction with all four wheels. Front and rear wheel disconnect permit the units to be towed to job sites at highway speeds of 50 to 55 mph.

Clark Equipment Co.
Industrial Truck Division
Circle 410 on Reader Service Card

RUGGED STEEL DOCK PLATE



ONE man easily rolls
it into position



A dock plate takes a terrific beating. That's why it should be built to stand the strain. The one dock plate that is designed to really take it is the ROLLWAY dock plate. With the ROLLWAY, you get the advantage of heavy, rugged steel construction . . . plus the exclusive feature that enables one man to easily roll it in and out of position in seconds. Wheels fold completely out of the way when in use.

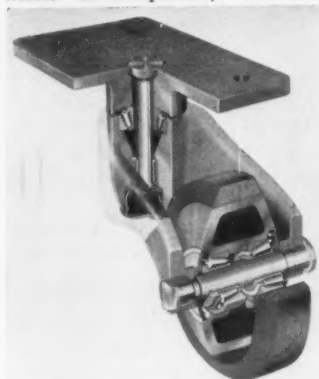
Improve your loading dock operation right away with the heavy steel ROLLWAY dock plate. Write now for free literature.

WOODFORD MANUFACTURING COMPANY
1601 DELAWARE DES MOINES, IOWA

Circle 120 on Reader Service Card for more information

Plastic Wheel Tread Meets Sanitary Requirements

The Neo-Seal can hold a 350-pound load on a 6-inch diameter wheel. It is specially suited for



use in baking and food processing industries. It is impervious to chemical and electrolytic deterioration from lard, shortenings, and other agents. The plastic tread is sealed to the aluminum wheel under compression—this eliminates recesses where bacteria could breed and allows permanent lubrication and easy steam cleaning. The tread is made of phenolic plastic material filled with macerated fabric.

Aerol Co., Inc.
Circle 411 on Reader Service Card

Low-Cost Powered Sweeper

Up to 50,000 square feet per hour can be swept with the new Parker motorized floor sweeper.



All controls are at hand level and the hopper is emptied and replaced in seconds. The sweeper collects dirt, trash, paper, scrap and all other types of debris. It is available in 20 and 28-inch sweeping widths.

Parker Sweeper Co.,
Circle 412 on Reader Service Card

Work Positioner Speeds Production

An adjustable calibrated spring mechanism in this positioner automatically keeps material at a

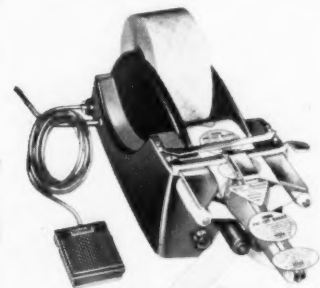


convenient work level, making production steadier and often faster. Here's how it operates: When the platform of the work positioner is empty, the calibrated spring mechanism keeps it at top position. As material is placed on the platform, it descends in direct ratio to the weight of the material. As more weight is added, the platform descends farther, while the top layer remains at the same work level.

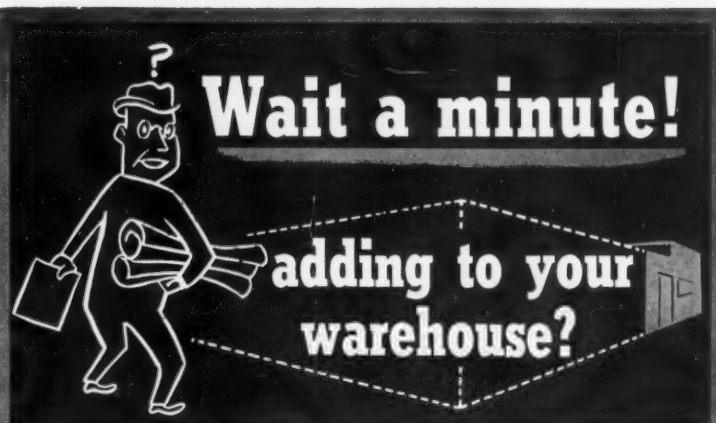
Lowerator Division, American Machine & Foundry Co.
Circle 413 on Reader Service Card

Dispenses Any Shape Die-Pressure Sensitive Labels

The Brady Tapematic will dispense pre-cut labels, masks, or special die-cut shapes made of any pressure sensitive tape: paper,



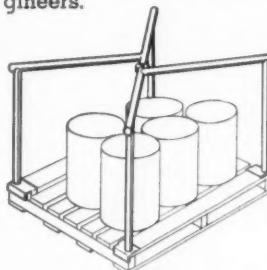
cloth, foil, film, or double-coated. It delivers the tapes on a conveyor to the operator's fingertips—at the operator's own speed. More than one operator may use the machine on the same line; they can even use different labels. Pre-cut tapes are dispensed from a roll of slit release liner. Labels can be printed or not, any size or shape, any variety on a single roll. The machine is operated by a foot switch for intermittent application, or by a



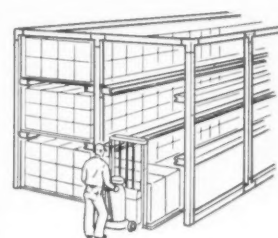
Has it ever occurred to you that you may have sufficient space—if you can put it to proper use?

Let **PALTIER** trained Materials Handling Engineers take a look. With properly selected equipment and flow of materials your present storage may be adequate! **Storage equipment COSTS LESS than NEW FLOOR SPACE!**

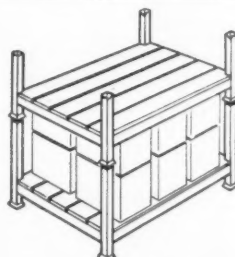
PALTIER STORAGE SYSTEMS are designed jointly by industrial architects, structural and materials handling engineers.



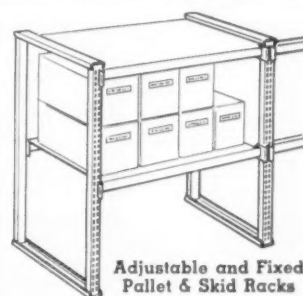
Tiering Pallet Hardware for standard pallets



Drive-In Racks for Bulk Storage



Portable Stacking Racks for practically every use



Adjustable and Fixed Pallet & Skid Racks

Also live racks, palletless "Finger" racks, and other specially built items to solve your specific problems.

Write today to . . .

THE PALTIER CORPORATION

Designers, Engineers and Manufacturers of Engineered Storage Systems

1709 Kentucky Street • Michigan City, Indiana

DISTRIBUTORS IN PRINCIPAL CITIES

NATIONAL DISTRIBUTORS FOR MET-LITE ALUMINUM DOCK BOARDS AND TRUCKS

Circle 97 on Reader Service Card for more information

NEW EQUIPMENT SECTION

micro-switch for continuous application.

W. H. Brady Co.

Circle 414 on Reader Service Card

Pneumatic Conveyor Is Portable

This combination positive and negative pressure pneumatic handling system is mounted on a four-wheel trailer designed for complete maneuverability. A 14 x 10 rotary vane airlock feeder insures large capacity on most types of free-flowing material. There is an in-



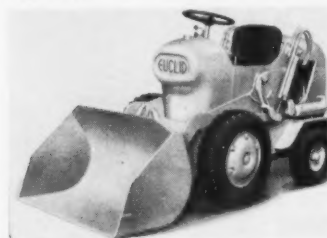
line filter with an easily removable filter bag.

Sprout, Waldron & Co., Inc.

Circle 415 on Reader Service Card

G.M. Has Front-End Loader

Two years of development went into the Model L-7 front-end loader. It is the first and smallest in capacity of several loader models



that will be built by General Motors' Euclid Division. It is equipped with torque converter and power shift transmission having synchronized non-stop high-low shift. Speeds range up to 11 mph forward or reverse. An inching valve between the foot brake and the driving clutches permits the machine to ease into restricted areas merely by operation of the foot brake.

*Euclid Division,
General Motors Corp.*

Circle 416 on Reader Service Card

Platform Truck Carries 4,000 lb

The 580 lift jack truck is steel framed for heavy duty. It is easily maneuverable, has a small turning



radius. The jack handle is 49 inches long, weighs 32 lb and is available with semisteel, vulcanized rubber, or all-plastic wheels. Platform sizes: 48 x 30 inches (116 lb), 60 x 30 inches (133 lb), and 72 x 36 inches (167 lb). The three types of wheels are also available on the platforms.

The Fairbanks Co.

Circle 417 on Reader Service Card

Bulk Hopper Moves 1,000 Pounds

One man can load, weigh, move, and discharge bulk materials with scale conveyor. It can weigh ma-

*as MAINTENANCE FREE
as CRANES
can be...*



ABELL-HOWE

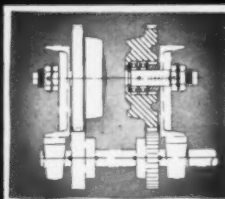
UNDERHUNG

CRANES

now with

FORGED ALLOY STEEL WHEELS, GEARS and PINIONS

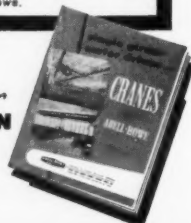
Only Abell-Howe offers you forged steel dependability at all critical points of wear—wheels, gears and pinions! Furthermore, Abell-Howe rugged outrigger construction keeps bridge in square—provides lateral bracing for bridge girder. Smooth fluid drive provides cushioned starts whatever the load—reduces reversing shocks. To further assure smooth operation and lasting service, anti-friction bearings used throughout—with double row ball bearings in end truck wheels. Here's crane value that can't be beat!



another ABELL-HOWE plus "QUICKLOCK" WHEEL ASSEMBLIES

Combine positive wheel mounting with immediate removability. To remove axle, simply loosen two nuts, twist axle 90° and pull it out. Wheels, too, are as easily removed with no dismantling of truck frame. "QUICKLOCK" is exclusive with Abell-Howe.

*Ask for
BULLETIN*



**ABELL-HOWE
COMPANY**

7743 W. Van Buren St., Forest Park, Illinois

Circle 19 on Reader Service Card for more information



materials accurately within an ounce, the hopper has a capacity of 18 cubic feet and is made of 14 gauge steel with sharply sloping sides to provide complete gravity discharge. The unit moves easily on 10-inch rubber-over-steel wheels and 6-inch roller bearing swivel casters. The brake, scale, dump handle, and pushing handle are all within easy reach of the operator from one position.

Suttle Equipment Corp.

Circle 418 on Reader Service Card

Industrial-Agricultural Fork Truck

Unpaved yards, roads, fields, or slopes are no problem for the Oliver Super 55 Fork Lift. Its 12-



26 tires provide plenty of traction for mud and snow, too. With six forward speeds, long hauls are easy. Power steering makes driving safe and easy under heavy loads. Two models are available, one with an 8-foot and the other a 10-foot mast. Lifting capacity is 4,000 pounds for both.

The Oliver Corp., Industrial Division

Circle 419 on Reader Service Card

Fifth Wheel Adds Maneuverability

Pipe trucks, department store trucks, hospital trucks and other specialized handling trucks use the Rol-Guide to improve operation and handling ease. It is a rigid retractable wheel mounted under the center of the truck. When the wheel is retracted the truck ma-

Strongest
for greater capacity

Strongest
for longer life

Strongest
for more protection

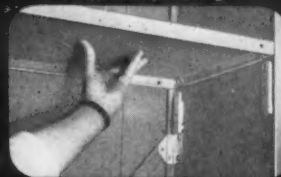
Strongest
for lasting appearance



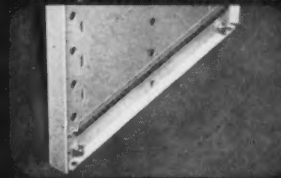
Loaded Shelving



X Type Sway Bracing



18 Gauge Steel Reinforced Shelves



Heavy Duty Uprights



Patented Boltless Shelf Brackets

DELUXE STEEL SHELVING

strongest because . . .

. . . the shelves are constructed to increase *structural strength* by coping corners to fit around the closed uprights, which are of I-beam construction. Deluxe shelves are formed with a continuous flange, "box-lid type" design for *greater stability*. Reinforced shelves, a Deluxe exclusive, have factory-embedded steel bars returned on the end flanges, adding *maximum rigidity*.

The film strip shows some engineered features that contribute to the greater strength of Deluxe steel shelving. With patented boltless shelf brackets, it is fast to assemble, fast to rearrange. Call your local Deluxe dealer for details or write us for new Deluxe shelving catalog No. 284.

DELUXE METAL FURNITURE COMPANY • WARREN 5, PENNA.

A Division of The Royal Manufacturing Company

DM-59-01

Circle 39 on Reader Service Card for more information

NEW EQUIPMENT SECTION



neuers on its four corner swivel wheels in the regular way. A flip

of a small foot lever lowers the fifth wheel into position and a spring holds it in contact with the floor. The truck then maneuvers like a center diamond mounted truck.

Roll-away Truck Manufacturing Company, Inc.

Circle 420 on Reader Service Card

Safety Lock Attachment

A safety swivel-hook arrangement is designed to clamp on the underside of truck forks. The attachment is then used to transport

heavy loads, such as dies or motors. Thus the load is carried under the forks rather than on top.

Merrill Brothers

Circle 421 on Reader Service Card

Baskets Have Tray Inserts

These stacking containers feature removable tray inserts made of expanded metal. These divide



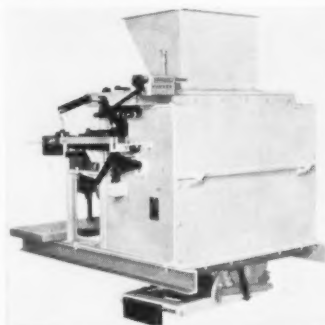
the master basket, enabling different parts to be processed at the same time. Baskets come in sizes 12 x 15 inches, 15 x 16, 18 x 30, and 24 x 30.

Hoffman Products Co., Inc.

Circle 422 on Reader Service Card

Automatic Bulk Scale

Model MSM will weigh and record dry, granular, sluggish, powdered, and dusty materials—



either finished products or ingredients in process. A totalizing counter records all operations. The gravity-flow system can handle from 20 to 50 pounds, volumes up to 5 cubic feet.

Richardson Scale Co.

Circle 423 on Reader Service Card

Keep Your Product on the Move



TV tubes emerge from a bake-out oven on a 12' wide Ashworth Belt

with ASHWORTH METAL PROCESS BELTS

Every industry has its problem of moving materials during processing. Fabricated from any metal capable of being formed into wire, Ashworth Belts provide a conveying medium permitting processing in transit through temperatures from -50° to 2100° F. Wherever your product must go during processing, be sure to get the "right" belt for the job . . . consult an Ashworth engineer.

Ashworth Metal Process Belts can help you effect economies . . . and keep your product on the move.

Illustrated literature available

ASHWORTH BROS., INC., WINCHESTER, VIRGINIA

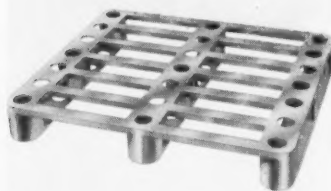


SALES ENGINEERS: Atlanta, Baltimore, Boston, Buffalo, Charlotte, N. C., Chicago, Cleveland, Dallas, Detroit, Fall River, Mass., Greenville, S. C., Louisville, New York, Philadelphia, Pittsburgh, Rochester, St. Louis, St. Paul, Tampa, Canadian Rep., Peckover's Ltd., Toronto, Montreal.

Circle 9 on Reader Service Card for more information

Magnesium Pallet

A permanent pallet of magnesium or aluminum eliminates pallet replacement and maintenance



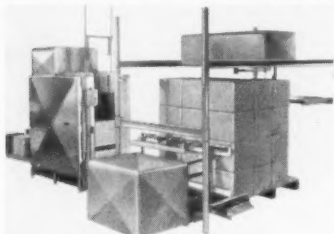
costs. Available in a wide range of sizes from 32" x 37" to 48" x 48" with capacities to 3 tons. Magnesium pallet weighs from 15 to 40 pounds. One piece construction and the absence of sharp corners and rough surfaces reduces damage to both the pallet and the load. All are of the four-way entry type.

Mag-Craft Corp.

Circle 424 on Reader Service Card

Automatic Pallet Loader

Power chain, roller, or belt conveyor can be used to connect the pallet loader to an existing pro-



duction line. The complete machine takes less than 80 square feet of floor space. It consists of three separately powered units, a stacker, a pusher, and an automatic taping machine (which is optional) all electronically synchronized. The pallet loader can accommodate various sizes of cartons or cases at speeds up to 30 a minute.

Lathrop Paulson Co.

Circle 425 on Reader Service Card

Pallet Rack

Dynarack is a slipjoint pallet rack consisting of two parts: up-rights and bedrails. It assembles quickly and simply, needing no special tools. Bedrails are slipped into position and set by a few hammer blows. Dimples in the pockets insure clearance for the

loose assembly and strength after being set.

Burtman Iron Works Inc.

Circle 426 on Reader Service Card

Fittings for Storage Racks Shown:

Kee Klamps are malleable iron fittings with set screws used with plain-end iron or steel pipe to build storage racks. They are made in 56 styles to match pipe from 3/8 inch to 2 inch diameter. You can get a catalog that gives you all the sizes; the company offers to design structures for

given load and space conditions.

Kee Klamps

North America Limited

Circle 427 on Reader Service Card

Truck for any Yard Job

A variety of attachments adapt the Work Bull fork lift truck to almost any yard job. Here, a 72-inch high-carbon steel blade makes it an ideal rig for maintaining yard surfaces, to moving snow from dock, walks, or drives, and for cleaning up loading areas. The blade angles 30° left and right. It has hydraulic tilt and



New (Model 734) Heavy Duty

CUSHMAN® ELECTRIC TRUCKSTER

Now you can carry up to a half-ton payload plus operator and passenger in a safe, silent, efficient Cushman Electric Truckster—gain extra convenience and economy.

Particularly suited for applications where gasoline powered equipment is not feasible, the three-wheeled Cushman Electric Truckster is easy to handle, easy to maneuver in cramped quarters.

Rigid unitized construction... heavy duty rear suspension... wedge type drive belts... a big 45 5/8" by 61 1/2" flat bed that can be equipped with stake racks... all add up to a rugged work-horse. Powered with heavy duty batteries, the 734 Electric Truckster travels up to 50 miles without recharging for a minimum operating cost. Fiber glass cab is available as optional equipment.

Ask your dealer for FREE demonstration or write for illustrated literature

Sold and serviced nationally — replacement parts immediately available
Dealer inquiries invited

CUSHMAN MOTORS
A Subsidiary of Outboard Marine Corporation
Lincoln, Nebraska



CUSHMAN MOTORS
1050 No. 21st, Lincoln, Nebr.

Please send complete information on the 734 Electric Truckster.

NAME _____

ADDRESS _____

CITY _____

STATE _____

Circle 35 on Reader Service Card for more information

CHART-PAK pressure-sensitive circles, rectangles and tapes made these flow chart symbols in 2 minutes 40 seconds

How long would it take you to draw them?

Chart-Pak's special, pre-printed flow chart symbols, and precision-slit tapes can save countless hours in making any kind of flow diagram. Available in squares, circles, triangles, arrows and other standard symbols. In tapes; overhead monorail, straight and curved conveyor are a few of the many available. All tapes and symbols have a water-clear, pressure-sensitive adhesive backing that sticks firmly, will not melt under heat of reproduction. Yet they can be easily lifted and re-applied for corrections. Ideal for use on all surfaces, especially Chart-Pak Planning Boards and Sheets. Write for full details.

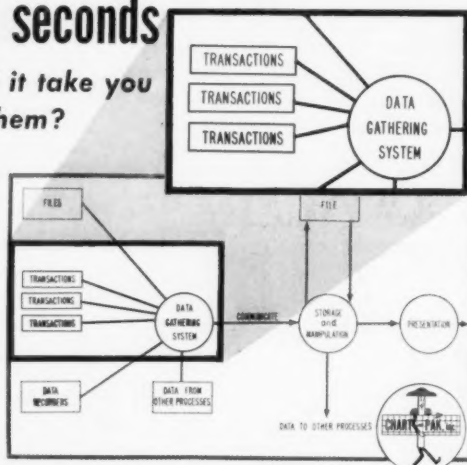


CHART-PAK

Saves time...
Saves money!

CHART-PAK, INC.

ORIGINATOR OF THE TAPE METHOD OF DRAFTING

82 River Road, Leeds, Mass.

USE THE

LIFT-O-MATIC
POWER TRUCK
ATTACHMENT

for
HANDLING DRUMS
with a
**POWER
FORK TRUCK**
WITH FORKS
LEFT ON
OR
REMOVED

Simple, automatic, mechanical handling of any size or type of drum—single or multiple.



WRITE FOR
CATALOG

MARVEL INDUSTRIES, Inc.
2226 CLEVELAND ST., EVANSTON, ILLINOIS

Circle 134 on Reader Service Card for more information

NEW EQUIPMENT SECTION



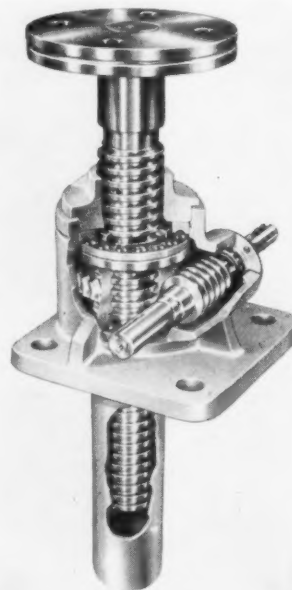
elevation. Other attachments include: 48-inch tines for mass handling of materials; scrap grab with hydraulic pitch off; load clamp for bottled gas cylinders.

*Massey-Ferguson
Industrial Division*

Circle 428 on Reader Service Card

Worm Gear Jacks for Conveyor Lines

The 1800 series includes jacks with capacities of 2, 5, 10, 15, 20, 25, 50 and 100 tons. The jacks



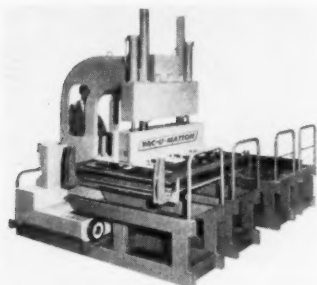
will hold heavy loads in position indefinitely without creep. The jacks can also be used on feeding tables loading platforms, and many other types of equipment. All models have a uniform rate of raise which permits jacks of varying capacities to be operated in unison on evenly distributed loads.

Duff-Norton Co.

Circle 429 on Reader Service Card

Plate Lifter Rides on Rails

A combination vacuum plate lifter and feeder can lift and move single or multiple plate loads from



2000 to 10,000 pounds. The unit rides on rails and can be made semi-automatic or fully automatic with remote controls. After the weight is lifted, it is moved along a track way by a gearhead motor directly connected to two driving wheels mounted on the carriage.

Vac-U-Mation Division.

F. J. Littell Machine Co.

Circle 430 on Reader Service Card

Sweeps Bulky Trash

The Litterdoor nozzle attachment enables the Floormobile suction floor cleaner to pick up



bulky trash such as coffee cups, wads of paper, rubber and steel scraps, etc., as easily as it does dust and dirt. The attachment is part of the nozzle and is opened by remote control. As the machine cleans a floor, the operator can open the Litterdoor without stopping or slowing down. The attachment is easily installed on any model Floormobile.

Handling Devices Co., Inc.

Circle 431 on Reader Service Card

British Loader Lifts And Counts Automatically

Sacks, boxes and similar loads up to 250 lbs. can be lifted and counted automatically on the standard British Lodematic loader. When the load is deposited, the platform automatically rises, stopping at set levels. When unloaded, it automatically returns. It tallies load numbers, and ceases operation when the assigned number is completed. Semi-automatic operation, with manual start and automatic stop, is also offered. A 10 foot lift is provided on stand-

ard models. Up to 14 feet lift of heavier loads is available on a 30 inch wide model.

*Lodematic Limited
Clitheroe, England*

Circle 432 on Reader Service Card

"Flying Saucer" Disc Eases Fork Pallet Positioning

An easy entry of a lift truck fork into the pallet is the claim of this manufacturer. The disc you see replaces the conventional roller wheels on the end of a truck fork. Set at the proper angle, it gives the effect of three added

**UP
WITH
TIER-RACK
EQUIPMENT!**

**DOWN WITH
STORAGE COSTS!**

TIER-RACK
PALLET STACKING FRAMES
TIER-RACK CORPORATION
122 N. 7th St., St. Louis 1, Mo.

PICKING FRAMES
PICK UP SPACE

You store other goods above the picking pallet without disturbing the order-picking process, put idle space to work.
PATS. PEND.

PALLET STACKING FRAMES
KEEP LAYOUTS FLEXIBLE

Convert present pallets to racks for ceiling-high storage. Go together and come apart fast, no fittings or tools.
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PAT. NO. 2,426,933
AND PATS. PEND.

PALLET GUARDS
SAVE YOUR PALLETS

Steel bumpers prevent end board breakage and nail failure due to rough handling. Cut costly pallet maintenance to minimum.
PAT. NO. 2,297,347

PALLET BOXES
CONTAIN THE LOAD


Fasten to rack sides to form inexpensive, temporary protective containers. Prevent load-shifting. Drop sides for accessibility.

WRITE FOR BOOKLET TR-11

Circle 109 on Reader Service Card for more information

He's lifting
5 tons
with 1 finger

Speed Handling...



Increase Storage Capacity with a C-F Lifter

Here's 1 man—a C-F Lifter and an electric hoist handling 5 ton packs of sheet steel with speed, safety and economy. One C-F Lifter handles a wide range of sizes . . . adjustments are made

by the operator in a few seconds, permitting the Lifter to shift from wide to narrow sizes in a few seconds. Made in capacities from 2 to 60 tons.

Bulletin SL-28 shows you how to cut handling costs. Write for it today.



CULLEN-FRIESTEDT CO.

1307 South Kilbourn Avenue • Chicago 23, Illinois



MLM BRIDGES THE LOADING GAP...



Safely!
Easily!

MLM Dock Boards are **LIGHTER . . . SAFER . . . STRONGER . . . BETTER BUILT**

- Self adjusting for varying height of dock and truck bed.
- Exclusive Handholds formed with side-rails. NO CASTINGS!—NO WELDS!
- Safety-tread surfaces for maximum traction . . . minimum accidents.

LET MLM IMPROVE YOUR MATERIALS HANDLING REQUIREMENTS

Dock Boards • Yard Ramps • Light-weight Dollies • Pallet Dollies

BUILT TO YOUR SPECIFICATIONS!

Sales Territories Open

Write today
for complete
information!

MODERN LIGHT METALS, Inc.

Coloma, Michigan

Phone: HOward 8-5041

Circle 87 on Reader Service Card



The BECO



- Why Pay More!
- Guaranteed
- Stronger
- Safer

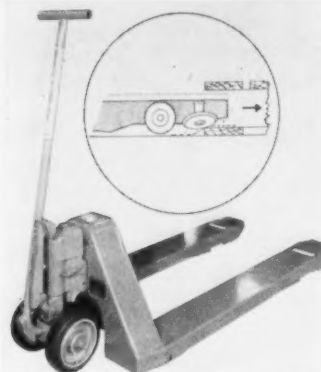
- For immediate shipment, wire phone, or pin this ad to your letterhead and mail to:

BECO - Bettendorf, Iowa

Four Models • Metal or Rubber Wheels

Circle 24 on Reader Service Card

NEW EQUIPMENT SECTION



inches of roller diameter to ease the climb of the fork over the bottom pallet board. Revolving action helps position the fork into pallet with ease. This "flying pallet with ease.

Barrett-Cravens Co.

Circle 433 on Reader Service Card

Service Cart

Here's a cart that can be used as a stock room cart, in shipping and receiving rooms, and as an



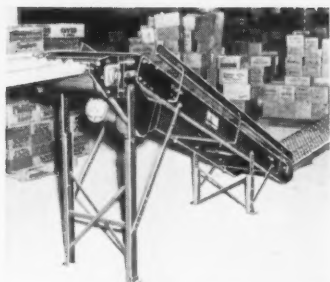
assembly line feeder. It is 36 inches long, 24 inches wide, and 32 inches high. The casters are 5 inches in diameter and roll easily. The front casters are set back from the leading edge of the lower tray to protect them from damage. The pan-type trays are 3 inches deep.

Lyon Metal Products, Inc.

Circle 457 on Reader Service Card

Booster Conveyor Is Adjustable

Model FJ is a powered belt booster that is fully adjustable to provide smooth infeed and discharge. The nose over angle is adjustable and can be set so that the unit provides double nose-

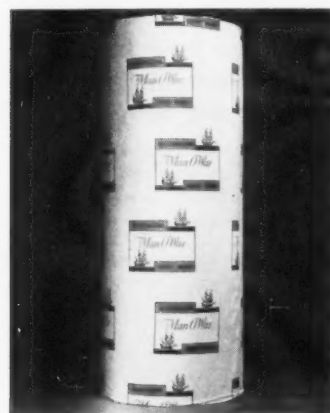


over action in a limited space. The floor stands can be adjusted to the desired incline.

Hytrol Conveyor Company, Inc.
Circle 434 on Reader Service Card

Kraft Wrapping Paper Is Super-Strong

Man O' War branded line of kraft wrapping paper offers a high degree of resistance to tearing and



bursting. It's easy to handle and fold, speeds up packaging operations. The line includes Man O' War Kraft wrapping papers, butchers kraft, bleached kraft, and bleached butchers kraft. It's available in rolls or sheets for all types of packaging—particularly where a strong, tough, pliable wrap is required.

Hudson Pulp & Paper Corp.
Circle 435 on Reader Service Card

Conveyor Lubrication

The 33 grease is serviceable from -100 to 350°F . It is a silicone material, has long life at high temperatures. It is used in the bearings of small electrical motors, meter clocks, plastic gears, and electronic and mechanical instruments exposed to extreme temperatures and weathering. Serviceable from -40 to 400°F , the 44 grease gives long service in

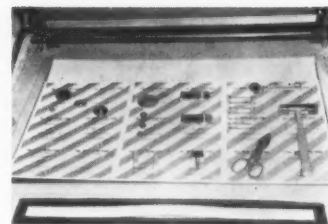
ball bearings of electric motors operating at high temperatures.

Dow Corning Corp.

Circle 436 on Reader Service Card

Low Cost of Skin-Pack Allows In-Plant Use

A low cost process now makes it practical to skin package in-plant components and parts, to expedite handling, shipping, and in-process protection. You can skin-package almost any kind of part in a matter of seconds with POM film (Poly- On-Mylar-Vacu-



umized), using low-cost and easy-to-operate machines. This method employs uncoated paperboard that does not have to be perforated to allow a vacuum to be drawn. A single heat and vacuum cycle takes just 10 seconds. Products and

NOW! A 2-TON ALL-PURPOSE TRUCK

BY

PRIME-MOVER

THE PLATFORM TRUCK • MODEL F40



This husky PRIME-MOVER knows what you expect!

OVER the past several years, the engineers at Prime-Mover Co. have pondered deeply on the development of this platform truck. A standard was set at *nothing less than the peer* of high-grade, industrial-type machinery. Now the F-40 is ready. Severely tested, it has *met* the standard, *and more*. This big rugged unit delivers the *heavy duty service* that industry expects in a material handling truck.

The F-40 is marketed by industrial truck distributors. Inquire there, or write to us for performance data and specifications.

ANOTHER GOOD PRODUCT BY PRIME-MOVER CO., MUSCATINE, IOWA

Circle 96 on Reader Service Card for more information

NEW EQUIPMENT SECTION

parts packaged this way are fully visible, and are protected from oils, grease, moisture, gas, dust, etc.

Print-A-Tube Co.

Circle 437 on Reader Service Card

For Shippers With No Dock

Lightweight, portable MLM yard ramp lets you drive fork trucks and other handling equipment into highway trailers with-



out a dock. Or you can unload at areas of the yard other than the dock. They're easily moved about without power equipment.

Modern Light Metals, Inc.

Circle 438 on Reader Service Card

announcing

the **KING** of them all...

Langsenkamp's NEW ALUMINUM HAND TRUCK

gives you:

- ① LONGEST LIFE
- ② EASIEST OPERATION
- ③ LOWEST MAINTENANCE

- 600 pound capacity
- Lightweight aluminum
- Can't rust
- 169 different models available
- True-circle, machined wheel hubs eliminate excessive bearing wear.
- Special aluminum alloy... as strong as steel
- Nylok aircraft-type fasteners can't work loose
- Only truck of its type with "cushion ride", balloon-shape, solid-rubber tires... need no maintenance
- Non-cast nose plate guaranteed not to break

• The LANGSENKAMP KING QUALITY aluminum hand truck is yours at a suprisingly low price. Write for full details...

F. H. LANGSENKAMP CO.

227 E. SOUTH ST.
INDIANAPOLIS 4, IND.

Circle 75 on Reader Service Card for more information

Diesel Powered Fork Lift Truck

The DE 30 is a diesel powered fork lift truck with a 6000 pound



capacity. Power flow is fully controlled from 0 to 8 mph. Its Fiat diesel engine has a 2500 hour warranty.

OM Lift Co. of America

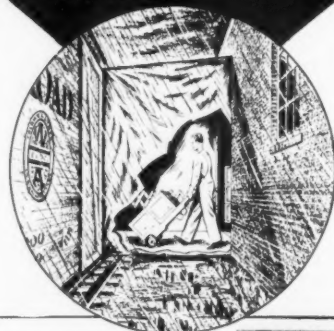
Circle 439 on Reader Service Card

Collapsible Containers Cut Shipping Costs

Jaton re-usable cargo vans can reduce your shipping costs in labor, handling, insurance, and packing materials. Designed for

CAPCO DOCK COVERS GIVE YEAR 'ROUND PROTECTION

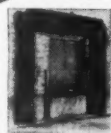
CAPCO Dock Covers completely enclose the space between car and building doorways protecting loading and unloading during bad weather... preventing accidents... insuring against loss of heat or refrigeration. 51 different models in any size for every loading problem.



Write for literature and name of nearest distributor.

CAPCO

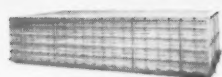
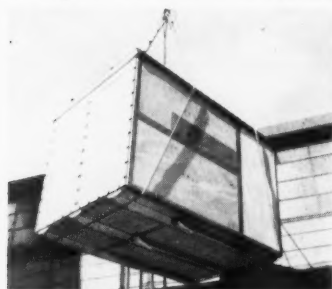
622-24 PROSPECT AVENUE • KANSAS CITY 24, MISSOURI



Circle 30 on Reader Service Card

MATERIAL HANDLING ENGINEERING

shipping by land or sea, they're made of waterproof plywood, steel, or aluminum panels. Capacities run up to 420 cubic feet. For the



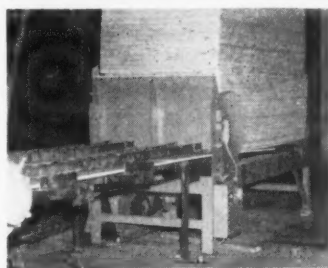
return trip they collapse down to 35 cubic feet (lower photo). Larger sizes are available on order. Originally marketed in Europe, the containers have saved shippers up to 70 percent in packaging labor, and 40 percent in handling.

Jaton Products Corp.

Circle 440 on Reader Service Card

Panel Feeder

Plywood and particle board panels are fed automatically into



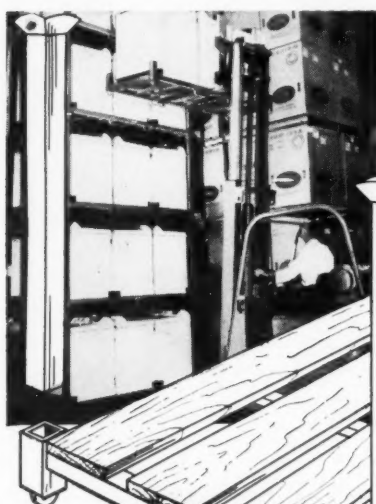
sanders by this feeder. Whenever the feed speed of the sander is changed the feeder automatically seeks and maintains the new speed to feed panels into the sander without gaps between the ends of panels.

The Cardwell Machine Co.

Circle 441 on Reader Service Card

Exclusive Cushioning for Delicate Edges

Edg-Pak cushioning material will protect sharp, breakable, or easily damaged edges in packaging or on-the-job handling. It has a



the new JUNIOR STAK-PAL

ERCO

A Tubular Steel Stacking rack complete with removable posts for as little as \$1220 each, f. o. b. factory for 100 basic racks, 30" x 42" with 24" posts.

END
FRAMES



SIDE
FRAMES

The new JUNIOR STAK-PAL is designed for plant, or warehouse, with maximum loads of 1200 pounds per rack. Stacked to practically any desired height with safety and rigidity. Same rugged construction as the 3000 lb. capacity STANDARD STAK-PALS now in use all over U.S.A. Fifteen basic rack sizes—post heights to 48"—All racks are four-way entry.



Samples will be furnished for inspection and testing at nominal cost. **WRITE TODAY!**

Circle 101 on Reader Service Card for more information

FEBRUARY, 1959

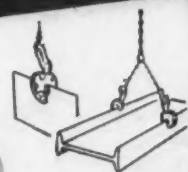
"Cutting Your Costs is our Business"

C. E. ROBINSON COMPANY
222 Colburn Avenue, Joliet, Illinois

YOUR BEST MOVE... MOVE with **MERRILL** MATERIAL HANDLING DEVICES



4
SIZES



**LIFTING
CLAMP**



TWIN LIFTER



DRUM LIFTER



DRUM TILTER



HAND GRIP



DRUM

OPENER

For Interesting Information write

MERRILL BROTHERS

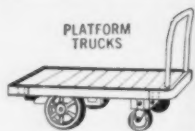
56-74 ARNOLD AVE., MASPETH, N. Y.

Circle 85 on Reader Service Card

Circle 76 on Reader Service Card for more information



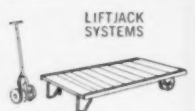
TRAILERS



PLATFORM TRUCKS



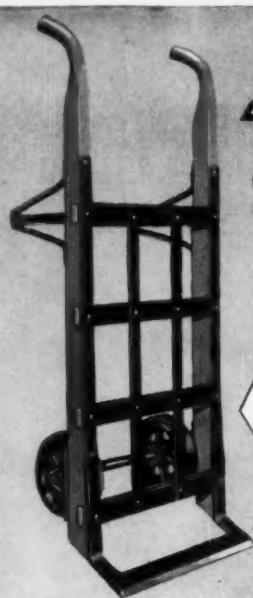
WHEEL BARROWS



LIFTJACK SYSTEMS



SPECIAL PURPOSE TRUCKS



LANSING CO.
LANCO MATERIAL HANDLING EQUIPMENT

EXTRA HEAVY DUTY WESTERN
HAND TRUCKS are built to last!

SELECTED
HARDWOOD
HANDLES

STURDY HARDWOOD FRAME
with MORTISED CROSSBARS
STEEL BOUND for ADDED STRENGTH

ALL PARTS
REPLACEABLE

91

- Choice of wheels — Rubber, Steel, or Plastic with plain bearing or roller bearing.
- Over 50 models and styles of two-wheel Hand Trucks — Platform Trucks and Special Fabrication. Send for FREE CATALOG.

LANSING COMPANY, Lansing 3, Mich.
BRANCHES: BOSTON — MINNEAPOLIS

NEW EQUIPMENT SECTION

patented spring-grip construction that holds it in place on edges up to $\frac{3}{4}$ inch thick. You can order it in pre-cut lengths or in rolls. There



are four different types: (NP) 2 mil polyethylene coated greaseproof cover with Mil-B-130a cushioned X-crepe inner liner, (N) Mil-B-130a cushioned X-crepe cover with Mil-B-130a inner liner, (NPP) 2 mil polyethylene coated greaseproof cover with 2 mil polyethylene coated cushioned X-crepe inner liner, and R (regular) cushioned X-crepe cover with Padrite or equal cushioned inner liner. Edg-Pak materials have recently been granted U. S. Air Force Catalog Stock Numbers.

Flex-O-Lators, Inc.

Circle 442 on Reader Service Card



VERSATILE

ALL-PURPOSE TRUCKS

by **WILDER**
FIRST IN QUALITY

27 standard style and 150 standard size platform, shelf, tray, rack, stake, bin, box and table trucks to select from. Special sizes can be furnished.

Write for Complete Information on Wilder's Full Line of Production Handling Equipment

WILDER MFG. CO., INC.
PORT JERVIS, NEW YORK

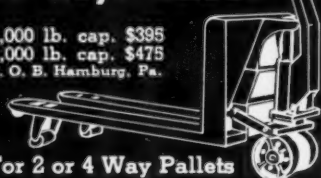
Circle 122 on Reader Service Card

NEW WRIGHT LIFT HYDRAULIC TRUCK

4 Big Benefits

... YET COSTS
UP TO **25% LESS!**

2,000 lb. cap. \$395
4,000 lb. cap. \$475
F. O. B. Hamburg, Pa.



For 2 or 4 Way Pallets

1. LONG LIFE - years of use assured by electric welded frame construction; hard chrome plating on pump and lifting pistons; long wearing Teflon pump and lift cups, etc. **2. HIGH LIFT** - 4 $\frac{3}{4}$ " standard. **3. SAFE OPERATION** - provided by pre-set overload relief valve and a "stay put" handle. **4. AMERICAN MADE** by a mfr. of Industrial Trucks since 1917. Send for full story or name of your local dealer. **DEALER INQUIRIES INVITED.**

Wright-Hibbard Ind. Truck Co.

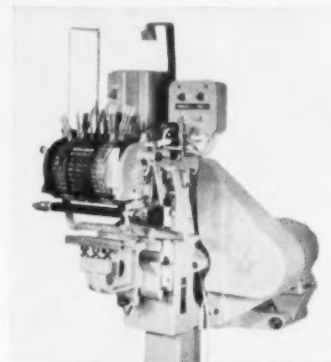
DIVISION OF *Jonard* INDUSTRIES, INC.

P.O. Box 227 Hamburg, Pa.

Circle 121 on Reader Service Card

Instant Dry Box Marking

You can handle containers as soon as they're marked with the Markem Model 105-10H marking machine. No delays or smudges be-



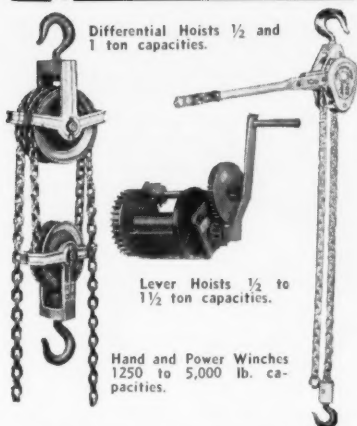
cause of slow-drying ink. The 105-10H is a foot-operated single line imprinter for boxes, cartons, envelopes, etc. It uses a thermostatically controlled heated printing head and Touch Dry ink, which is a solid at room temperatures.

Circle 111 on Reader Service Card

MAKE MATERIAL HANDLING EASY



use
THERN
Hoists and Winches



Move heavy loads with ease! Use Thern Hoists and Winches. Many new features. Extra safe! Write for **FREE** catalog and low prices.



THERN MACHINE CO.
3762 West 4th St.,
Winona, Minn.

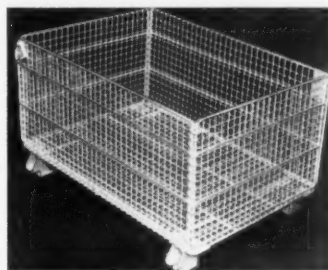
Marking speeds are 80 to 100 a minute. Type wheels rotate for quick changes. Just clean this machine once a week. The dry ink comes in 15 standard colors, or special colors to match your needs.

Markem Machine Co.

Circle 443 on Reader Service Card

Small Parts Containers

"Junior" Palletainers are now marketed in two practical standard sizes. They are sturdy, close-



meshed, all-steel containers designed for handling, storage and transit of small parts, assemblies, or delicate products. They fold down quickly like their larger counterpart.

Union Steel Products Co.

Circle 458 on Reader Service Card

TEXITE WHEELS-

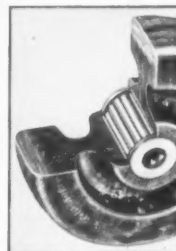


IN *Any* SIZE

Now... for the first time you can have long wearing, easy rolling, floor protective Texite wheels in *any* size! Texite wheels are those tough, high capacity industrial wheels made of heavy, macerated canvas, impregnated with phenolic resin and press formed under high pressure and temperature. Immediately available in diameters from 3 1/4" to 16", tread widths from 1 1/2" to 4" and capacities all the way to 8000 pounds. Plain, roller or sealed bearings.

Texite Wheels with Laminated Tread

More durable than regular Texite, highly resistant to chipping or fraying. Shock or impact resistance is 35% greater and safe loading capacities are increased 25%. Available in same broad range of sizes as regular Albion Texite Wheels.



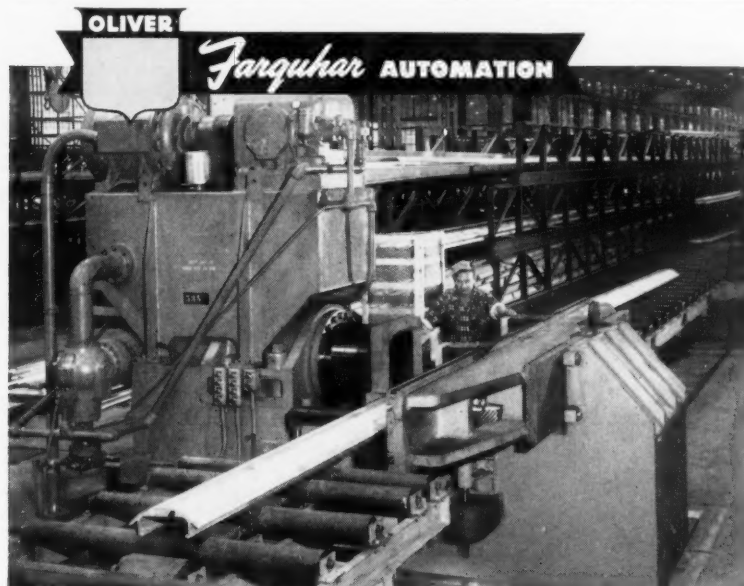
Big New '59 Catalog

Albion's big, new '59 Catalog of Industrial Casters and Wheels is ready for your use and convenience. Write for your personal copy - today!

ALBION INDUSTRIES, inc.
Albion, Michigan



Circle 4 on Reader Service Card



At the U.S. Air Force Heavy Press plant operated by Kaiser Aluminum and Chemical Corporation, Halethorpe, Maryland, Oliver-Farquhar automation specialists designed and built this press-conveyor set up. O-F live-roller conveyors move the aluminum extrusions into the press. The conveyor moves up or down to position the work in the die. Then the ram of the O-F Horizontal Bulldozer Press moves forward to straighten the extrusion. Finally the conveyor moves the work away and the operating cycle starts over again.

This is typical of the automation-minded engineering services incorporating hydraulic or mechanical presses and conveyors that is available only at Oliver-Farquhar. Write, wire or phone for information. The Oliver Corporation, A. B. Farquhar Division, Dept. F-06, York, Pennsylvania.

Circle 53 on Reader Service Card for more information
FEBRUARY, 1959

QUIET!

No need to shout



Channel your commands *sotto voce* by IMP*, Kaar's mobile, two-way radio system. IMP pierces every barrier — gets instant response in the yard, the warehouse, and the plant. It provides fingertip and voice control of your crews. It's fast . . . speeding production. It's sure . . . minimizing confusion. It's efficient . . . pruning operational expense. All within your reach—with IMP.

Your own men can install IMP. It's simple. Ruggedly built, it has straightforward circuits. Components will perform reliably for years with minimum maintenance. IMP is the third hand you've wanted for that extra bit of needed supervision. Select IMP . . . a basic working tool for efficient communications no matter what your plant or organization.

*Industrial Mobile Phone

See your Kaar dealer or
fill in the coupon below



ENGINEERING CORP.

2959 MIDDLEFIELD ROAD
PALO ALTO, CALIFORNIA

Please send me additional information on
IMP, Kaar's Industrial Mobile Phone.

Name

Address

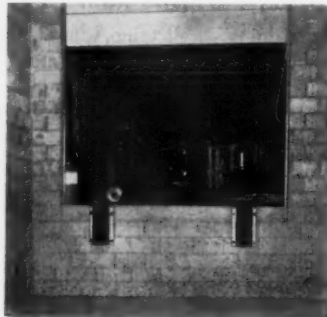
City State

Circle 72 on Reader Service Card

NEW EQUIPMENT SECTION

Vertical Loading Dock Bumper

This manufacturer announces a vertical dock bumper with special application to shipping



or receiving docks that are served by commercial vehicles of various sizes and bed heights. Friction and strain are minimized. Possibility of loaded trucks catching under dock timbers is eliminated due to the increased depth of the bumper. It is made of rubberized fabric pads $4\frac{1}{2}$ inches thick, 8 inches wide, and in depths of 20, 24 and 36 inches.

Durable Mat Co.

Circle 452 on Reader Service Card

Transceiver Designed To Eliminate Signal Losses

No additional antenna or other accessories are required with the CUB-1/MT-1 Citizens Band base



station transceiver. The manufacturer says that it will provide better performance than has been possible under regulations governing the Class B citizen's band. It operates at 465 megacycles. Full power is delivered to the antenna because the antenna is built into the remote transceiver.

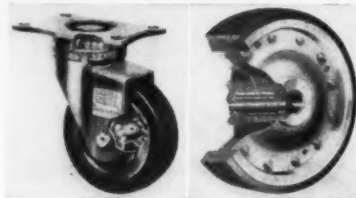
Vocaline Co. of America, Inc.

Circle 453 on Reader Service Card

*You'll
benefit by big
advantages*

It pays to Specify

DARNELL
CASTERS AND WHEELS



1

RUBBER TREADS . . . a wide choice of treads suited to all types of floors, including Darnelloprene oil, water and chemical-resistant treads, make Darnell Casters and Wheels highly adapted to rough usage.

2

RUST-PROOFED . . . by zinc plating, Darnell Casters give longer, care-free life wherever water, steam and corroding chemicals are freely used.

3

STRING GUARDS . . . Even though string and ravelings may wind around the hub, these string guards insure easy rolling at all times.

4

LUBRICATION . . . all swivel and wheel bearings are factory packed with a high quality grease that "stands up" under attack by heat and water. Zerk fittings are provided for quick grease-gun lubrication.

FREE

new

MANUAL

DARNELL CORPORATION, LTD.

DOWNEY (LOS ANGELES COUNTY) CALIFORNIA
37-28 SIXTY-FIRST ST., WOODSIDE 77, L. I., N. Y.
36, NORTH CLINTON STREET, CHICAGO 6, ILLINOIS

Circle 37 on Reader Service Card

MATERIAL HANDLING ENGINEERING

Circle 45 on Reader Service Card for more information

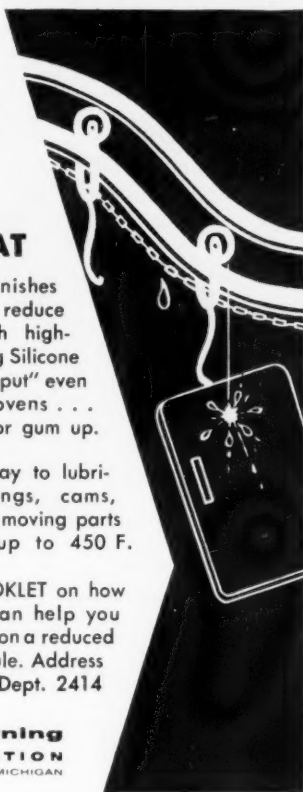
USE SILICONE LUBRICANTS

TO STOP OIL DRIP IN OVEN HEAT

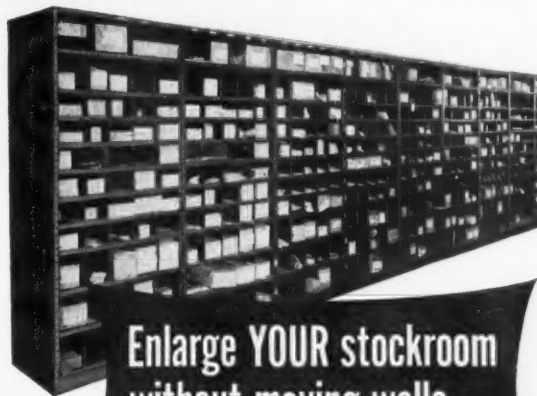
Protect your product finishes against dripping oil . . . reduce rejects, end waste with high-temperature Dow Corning Silicone Greases. Silicones "stay put" even in the hottest baking ovens . . . won't thin out, oxidize or gum up.

It's the money-saving way to lubricate bearings, bushings, cams, gears, valves and other moving parts at any temperature up to 450 F.

Send for FREE BOOKLET on how silicone greases can help you improve lubrication on a reduced maintenance schedule. Address Dept. 2414



Circle 50 on Reader Service Card for more information



Enlarge YOUR stockroom without moving walls

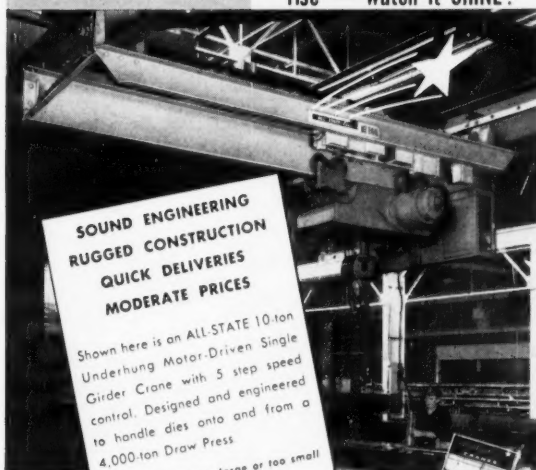
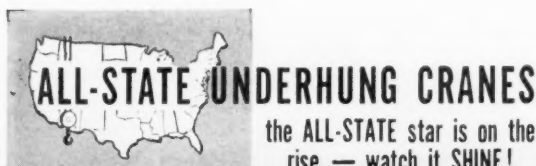
You can custom design storage facilities to suit your exact needs—with Equipto Steel Shelving Units. Eliminate "dead areas" and unnecessary bulk . . . enlarge your stocking area . . . accelerate stock handling.

Available in all sizes, either open or closed . . . dividers, panels, label holders, bin fronts, and drawer sections may be added or rearranged at any time. For further details on shelving and other Equipto products write for free 16 page booklet No. 256, "Short Cuts to Greater Profits."



805 Prairie Avenue
Aurora, Illinois

STEEL SHELVING . . . PARTS BINS
. . . LOCKERS . . . DRAWER UNITS . . . CARTS . . . WORK BENCHES.



**SOUND ENGINEERING
RUGGED CONSTRUCTION
QUICK DELIVERIES
MODERATE PRICES**

Shown here is an ALL-STATE 10-ton Underhung Motor-Driven Single Girder Crane with 5 step speed control. Designed and engineered to handle dies onto and from a 4,000-ton Draw Press.

Photo courtesy of
A. O. Smith
Corporation
Milwaukee

No installations too large or too small
for ALL-STATE CRANE

Write for FREE Catalog

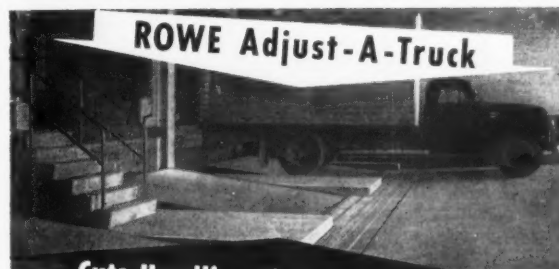
ALL-STATE Engineering Co., INC.

2021 North 76th St., Milwaukee, Wis. Telephone: FLagstone 3-8050

Representatives in All Principal Cities

Circle 6 on Reader Service Card for more information
FEBRUARY, 1959

Move Greater Payloads . . . Faster, Safer With Money Saving



Cuts Handling Time Up To 67%

...Saves Man Hours and Dock Space

■ Here's the low cost answer to positioning any highway carrier to proper dock height when it is impossible to use dock leveling ramps because of construction or space limitation. This 40,000 lb.-capacity hydraulic truck leveling device has 24" up-down travel and features:
Low Initial, Installation and Operating Cost • Short Amortization Period • Rugged Construction for Long-Life Service • Minimum Maintenance • Exceptional Ease of Operation.



Write for our
new folder—It's
free of course

Planning service available without cost or obligation.

ROWE METHODS, INC.

2534-C Detroit Ave.

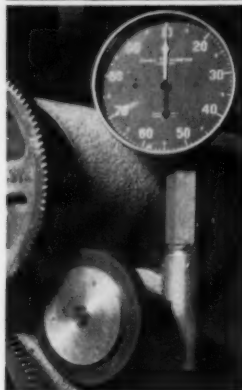
Cleveland 13, Ohio

Circle 104 on Reader Service Card for more information

Circle 71 on Reader Service Card for more information

JONES SURFACE SPEED INDICATORS

(measures feet per minute, yards per minute)



**Assure all hits—
no errors!**

HIGHER PRODUCTION
QUALITY CONTROL
INCREASED ECONOMY
SAFETY

Serving in Many Industries
textiles, plastics, chemical, rubber,
paper and film, box and boxboard

Guaranteed Accuracy Wheel rides on work and transmits rate of speed to dial readings in F.P.M., Y.P.M., R.P.M.

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Unaffected by temperatures, moisture, electric currents

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Stamford, Conn.

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**LEARN HOW—Send for FREE folder on
OXY-CATALYST Exhaust Purifiers!**

Profit from increased employee productivity... make air safe, clean, healthful. Install exhaust purifiers on materials handling equipment and other indoor engines to change dangerous exhaust fumes to harmless vapor!

Replace present conventional mufflers. Economical, easy-to-install models available for gas, LP-gas or diesel engines. Optional on new equipment of leading manufacturers.

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Catalysts for cleaner, safer air

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☐ LPG ☐ unleaded gas ☐ leaded gas ☐ 4-cycle diesel

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NEW EQUIPMENT SECTION

Stand-Still Digger

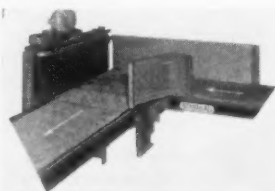
The fast swing of an excavator turntable and a seven-foot independent crowding action permit the Koehring Skooper to go through numerous complete digging and loading cycles while standing in one place. Virtual elimination of track movement, plus smooth swing and crawl action, cuts operator fatigue and permits continuous full production. It is available with buckets ranging from 17½ to 21½ yards capacity.

Koehring Division, Koehring Co.

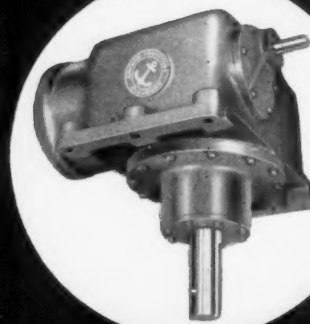
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dependable



ANCHOR VERTICAL SPEED REDUCERS

Designed specifically for conveyor applications requiring a vertical output shaft (up or down), and extended bearing housing for high overhung load, ANCHOR Reducers feature readily accessible helical gears for ratio changes. Available from stock in six sizes, ratios up to 1800:1. Write for Bulletin 57-1.

ANCHOR STEEL & CONVEYOR CO.

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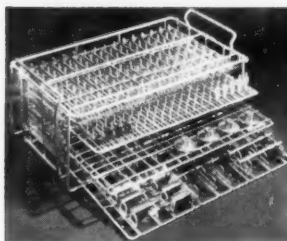
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MATERIAL HANDLING ENGINEERING

vertical belt assists in turning the commodity and in making the transfer complete. Each belt is separately driven to eliminate complicated drive arrangements and maintenance problems.

Standard Conveyor Co.

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Wire baskets for handling precision parts features wire shelves or trays that may be removed from the sides. "Multi-Shelf" carriers are designed to suspend individual small precision parts for protection of exposed surfaces during handling, processing, washing, degreasing, storage and assembly. Parts are loaded on wire shelves. Number of shelves may be varied, depending on size of the parts being handled. The baskets are fabricated to individual requirements. However, two standard sizes are available: O.D. 13 $\frac{3}{8}$ " x 21" x 8" and O.D. 11 $\frac{3}{4}$ " x 18" x 8 $\frac{1}{2}$ ".

Mid-West Wire Products Co., Inc.

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SWIFT...
SAFE...
SILENT...**

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Dependable, long-lasting ElectroLift hoists are used by the thousands in America's largest manufacturing plants. Features of these units—ranging from 1/4- to 10-ton capacity—include:

- Worm-drive design for safe, sure braking action
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- Fully enclosed motor and gearing for clean, quiet operation
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For details on speed, models and operation, consult your classified directory for the ElectroLift representative nearest you.



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Clifton, N. J.

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Lightest-Weight Bulk Body on the Road!

for all the **BIG** Jobs

BAUGHMAN BULKMOBILE

34' STEEL BODY WEIGHS JUST 13,260 LBS. . . . a complete semi-trailer unit ready to roll. Same length Bulkmobile body fabricated in aluminum weighs only 8700 lbs. Other body lengths have proportionately same weights.

Lighter-weight body means greater carrying capacity!

- Choice of three drives—auxiliary engine hydraulic, mechanical or PTO hydraulic.
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- Choice of four methods of rear discharge—belt conveyor, screw conveyor, belt-and-bucket elevator, or distributor.

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- Discharge rate of 1 to 2 tons per minute, depending on material.
- Entire body completely compartmented at 4' intervals, with trip door for each compartment that is controlled by driver from side of body.

Service and parts from 200 service branches.
Better service through better engineering.



BAUGHMAN MANUFACTURING CO.

170 ARCH STREET

JERSEYVILLE, ILL.

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CLASSIFIED ADVERTISING SECTION

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FOR SALE

Magnesium hand truck department. All patterns, dies, and fixtures, and inventory. Take advantage of growing demand for light weight trucks! Priced for quick sale. Write c/o MATERIAL HANDLING ENGINEERING, Box 2259.

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In New Orleans, Jackson Warehouses, Inc. A complete shipping and warehousing service. Safe, convenient

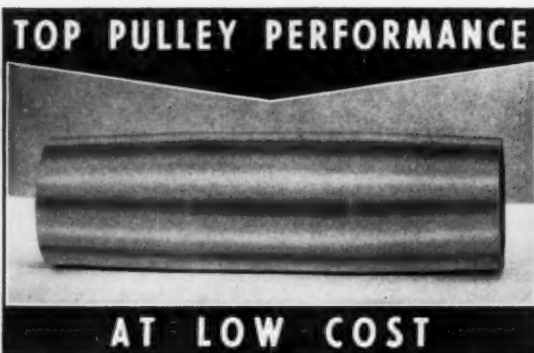
and efficient. Full insurance coverage; 7c per \$100 per year. Wire or write for rates. Call WH 5-5395 Jackson Warehouses, Inc., 2941 Royal St., an affiliate of S. Jackson & Son, Inc. Dedicated to efficient, dependable and trustworthy service since 1902.

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- No pulley maintenance
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- Sizes start at 3" diam.

If you are buying conveyors, specify these pulleys. Better conveyor performance will be the result.

For complete information, write: Dept. F

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CHANTLAND COMPANY
HUMBOLDT, IOWA U.S.A.

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Many designs in trucks, trailers,
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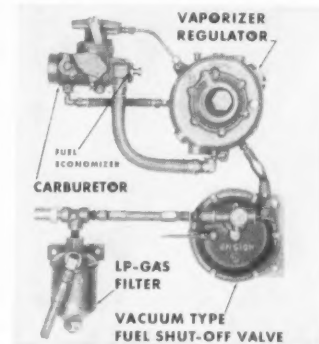
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LP-Gas properly carburetted by Ensign eliminates noxious odors and reduces the carbon monoxide content in the air, hence improves working environment for personnel. With LP-Gas you reduce operating costs up to 40%.



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OF AN
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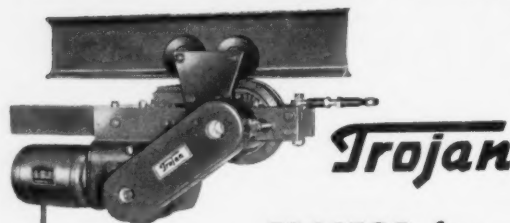
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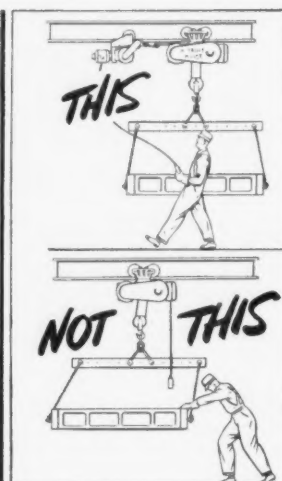
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In Hundreds of In-
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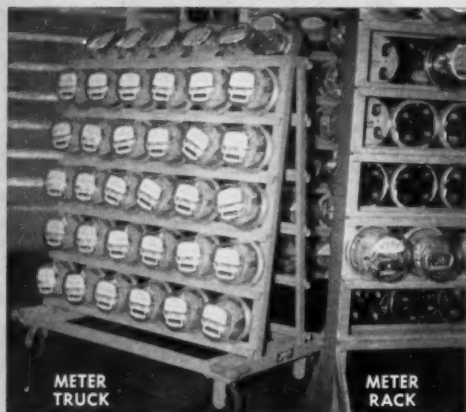
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TRUCK

METER
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MATERIAL HANDLING ENGINEERING



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... and cross over to fast, immediate cost cuts in your handling operations! The right kind of equipment on your loading dock can help turn red figures into black on the company operating statement. That's why the *right* dock board is so important. Service life, safety, strength and dependability—these are vital! And that's why more than 80% of America's leading corporations use Magliner magnesium dock boards year after year.

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...could happen to any man

Jones suffered a heart attack. It happens to hundreds of thousands of Americans each year. Heart attack, or coronary artery disease, is our nation's leading single cause of death, accounting for 250,000 fatalities annually.

But because of new advances in diagnosis and treatment, *most victims of heart attack recover* to lead useful and productive lives.

Jones recovered and is back at his desk today, thanks to new medical knowledge developed through heart research.

Your Heart Association, through *your* support of the Heart Fund, has allocated more than \$32 million during the past ten years to research on heart and circulatory diseases. A large portion is being spent to discover the underlying causes of atherosclerosis, a form of hardening of the arteries, which is responsible for heart attack.

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FIGHT HEART DISEASE



GIVE HEART FUND
